

NATURAL HISTORY,

GENERAL AND PARTICULAR,

BY THE

COUNT DE BUFFON,

TRANSLATED INTO ENGLISH.

ILLUSTRATED

With three hundred and one COPPER-PLATES,

AND OCCASIONAL

NOTES AND OBSERVATIONS

BY

THE TRANSLATOR.

VOLUME VII.

EDINBURGH:

Printed for WILLIAM CREECH.

M,DCC,LXXX.



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CONTENTS

1609/3788.

Of the Bishopric of Carthage, and
the manner of the Councils and

the several History of the Cardinals, or Six

of the Lamb, or Harbinger

of the Crown, or Guinea

of the Chequer, or

of the Marston

of the Council, or Indian

of the Mark

of the Rats, or

of the Council, or Black

of the Council, or

of the Council, or

of the Council, or

of the Council, or

of the Council, or

of the Council, or



C O N T E N T S.

	page.
<i>Of the Bubalus, or Cervine Antilope, and other animals allied to the Gazelles and Goats</i>	1
<i>The Natural History of the Condoma, or Striped Antilope</i>	8
<i>of the Guib, or Harnessed Antilope</i>	12
<i>of the Grim, or Guinea Antilope</i>	14
<i>of the Chevrotains, or Small Antilopes</i>	22
<i>of the Mazames</i>	30
<i>of the Condous, or Indian Antilope</i>	40
<i>of the Musk</i>	44
<i>of the Babiroussa, or Indian Hog</i>	58
<i>of the Cabiai, or Thick-nosed Tapir</i>	64
<i>of the Porcupine</i>	69
<i>of the Coendou, or Brazilian Porcupine</i>	76
<i>of the Canadian Porcupine</i>	83
<i>of the Tanrec and the Tendrac</i>	86

Second

	Page.
<i>Second View of Nature</i>	89
<i>Natural History of the Giraffe, or Camelopard</i>	109
_____ of the Lama and Pacos	133
_____ of the Sloths	150
_____ of the Surikate, or Four-toed	
<i>Weasel</i>	166
_____ of the Tarbar, or Woolly	
<i>Ferboa</i>	171
_____ of the Phalanger, or Surin-	
nam Opossum	174
_____ of the Coquallin, or Varied	
<i>Squirrel</i>	176
_____ of the Hamster, or German	
<i>Marmot</i>	178
_____ of the Bobak, and other Mar-	
mots	198
_____ of the Ferboas	201
_____ of the Ichneumon	210
_____ of the Fossane	219
_____ of the Vansire	221
_____ of the Makis, or Maucanco's	222
_____ of the Loris, or Taillefs	
<i>Maucanco</i>	230
_____ of the Javelin Bat	234
_____ of the Serval, or Mountain	
<i>Cat</i>	240
_____ of the Ocelot, or Mexican	
<i>Cat</i>	243
_____ of the Margai, or Cayenne	
<i>Cat</i>	249

C O N T E N T S.

	Page.
<i>Natural History of the Jackal and Adive</i>	255
<i>of the Haris, or Arctic Dog</i>	268
<i>of the Glutton</i>	274
<i>of the Mongetter, or Stink-</i>	
<i>ing Polecat</i>	295
<i>of the Pekan and Vison</i>	307
<i>of the Sable</i>	309
<i>of the Leming, or Lapland</i>	
<i>Marmot</i>	316
<i>of the Sea Otter</i>	321
<i>of the Canadian Otter</i>	324
<i>of the Seals, Walrus, and</i>	
<i>Manati</i>	328
<i>of the Seals</i>	330
<i>of the Walrus, Morse, or</i>	
<i>Sea Cow</i>	354
<i>of the Indian Walrus, or</i>	
<i>Dugon</i>	370
<i>of the Manati</i>	374
<i>Treatise of the Degeneration of Animals</i>	392

D I R E C -

DIRECTIONS to the BINDER.

Place plate CXCVIII. between page 12. and page 13.
 CXCVIX. between page 20. and page 21.
 CC. CCI. and CCII. between page 38. and page 39.
 CCIII. between page 62. and page 63.
 CCIV. between page 68. and page 69.
 CCV. and CCVI. between page 76. and page 77.
 CCVII. between page 82. and page 83.
 CCVIII. between page 84. and page 85.
 CCIX. and CCX. between page 88. and page 89.
 CCXI. between page 132. and page 133.
 CCXII. CCXIII. and CCXIV. between page 164.
 and page 165.
 CCXV. between page 170. and page 171.
 CCXVI. between page 172. and page 173.
 CCXVII. and CCXVIII. between page 174. and
 page 175.
 CCXIX. between page 176. and page 177.
 CCXX. between page 196. and page 197.
 CCXXI. between page 200. and page 201.
 CCXXII. between page 218. and page 219.
 CCXXIII. CCXXIV. CCXXV. and CCXXVI.
 between page † 222. and page 223.
 CCXXVII. CCXXVIII. and CCXXIX. between
 page 230. and page 231.
 CCXXX. between page 232. and page 233.
 CCXXXI. CCXXXII. and CCXXXIII. between
 page 238. and page 239.
 CCXXXIV. between page 242. and page 243.
 CCXXXV. and CCXXXVI. between page 248.
 and page 249.
 CCXXXVII. between page 254. and 255.
 CCXXXVIII. between page 266. and page 267.
 CCXXXIX. between page 272. and 273.
 CCXL. between page 294. and 295.
 CCXLI. CCXLII. CCXLIII. and CCXLIV. be-
 tween page 306. and page 307.
 CCXLV. and CCXLVI. between page 308. and
 page 309.
 CCXLVII. between page 328. and page 329.
 CCXLVIII. CCXLIX. CCL. and CCLI. between
 page 390. and page 391.

N. B. Place the leaf numbered † 221. † 222. immediate-
 ly after page 222. without this mark †.

E R R A T A

- Page 150. line 29. *for didactylis read didactylus.*
152. 22. *for patts read parts.*
181. 6. *for as read ae.*
208. 23. *after Scriptures add than.*
309. 13. and p. 310. line 14. *for shading read shed-
ding.*
330. 2. *for Thy read They.*
364. 23. *read, solid within, except near the roots.*
401. 8. *dele other.*
414. 14. *read, and the individuals differ only.*
420. 20. *dele which.*
444. 12. *after and add he.*

E R R A T A .

Page 180. line 29. for "discovery" read "discovery".	180.
181. line 1. for "the" read "the".	181.
182. line 1. for "the" read "the".	182.
183. line 1. for "the" read "the".	183.
184. line 1. for "the" read "the".	184.
185. line 1. for "the" read "the".	185.
186. line 1. for "the" read "the".	186.
187. line 1. for "the" read "the".	187.
188. line 1. for "the" read "the".	188.
189. line 1. for "the" read "the".	189.
190. line 1. for "the" read "the".	190.
191. line 1. for "the" read "the".	191.
192. line 1. for "the" read "the".	192.
193. line 1. for "the" read "the".	193.
194. line 1. for "the" read "the".	194.
195. line 1. for "the" read "the".	195.
196. line 1. for "the" read "the".	196.
197. line 1. for "the" read "the".	197.
198. line 1. for "the" read "the".	198.
199. line 1. for "the" read "the".	199.
200. line 1. for "the" read "the".	200.



NATURAL HISTORY.

The BUBALUS, or CERVINE AN-
TILOPE, and other animals allied
to the GAZELLES and GOATS.

THE BUBALUS*.

IN the article Buffalo, we remarked, that the modern Latins had improperly applied to it the name *bubalus*. This appellation antiently belonged to the animal we are now treating of,

VOL. VII.

A

whose

* The porcine antelope, with horns bending outward and backward, almost close at their base, and distant at their points; twisted and annulated; very strong and black; some of them are above twenty inches long, and above eleven in girth at the base. The head is large, and like that of an ox. The eyes are placed very high, and near the horns. The form of the body is a mixture of the stag and heifer. It is of the size of the former. The tail is rather more than a foot long, and terminated with a tuft of hair. The colour is a reddish brown; *Pennant's Synops. of quad. p. 37.*

Βεβαλος, in Greek; *bubalus*, in Latin; *bubale*, in French.

Βεβαλος, *Aristotelis* Genus id fibrarum. — *Cervi*, *damae*,
Bubali,

whose nature is very different from that of the buffalo. In some external qualities it resembles the stag, the gazelles, and the ox. It resembles the stag in size and figure *, and particularly in the form of its limbs: But its horns are permanent, and nearly constructed like those of the largest gazelles, to which it is allied by this character as well as its natural dispositions. Its head, however, is much longer than that of the gazelles, or even that of the stag. In fine, it resembles the ox in the length of

Bubali, et aliorum quorundam sanguini deest, quocirca eorum sanguis non similiter atque caeterorum concrevit. — *Bubali* sanguis aliquantulo spissatur; quippe qui proxime ovillo aut paulo minus consistat; *Arist. Hist. anim. lib. 3. cap. 6.* — *Bubalis* etiam capreisque interdum cornua inutilia sunt; nam etsi contra nonnulla resistunt et cornibus sese defendunt, tamen feroces pugnacesque belluas fugiunt; *Idem. de partibus animal. lib. 3. cap. 11.*

Bubalus. *Plinij*. *Bubalum* gignit Africa, vituli cervicæ quadam similitudine; *Hist. nat. lib. 8. cap. 15.*

Βουβαλίδης; *Ælian. lib. 3. cap. 1. lib. 5. cap. 48. lib. 7. cap. 47. et lib. 13. cap. 4.*

Βουβαλός. *Oppiani*. *Dorcade platycerote* corpore inferior, cornua non ramosa sicut *Cervis* et *Capreis*, sed *rupicaprarum* cornibus similia, tum situ, tum in averfam partem retortis mucronibus, ad pugnam fere inutilia; *De Venatione, lib. 2.*

Buselaphus Cæii, apud *Gesnerum*; *Hist. quad. p. 121.*

Bubalus Capreolus Africanus; *Horatius Fontana*, apud *Al-drovandum*, de *quad. Bisul. p. 364. & 365.* Ubi vide figuram.

Vache de Barbarie; *Memoires pour servir à l'histoire des animaux, part. 2. p. 24. fig. 39.*

Elan; *Description du Cap de Bonne-esperance, par Kälbe, tom. 3. chap. 4.*

Bucula cervina; *Cæii Opusc. p. 63.*

Antilope Bubalus; *Pallas Miscel. spicil. 12.*

* See the figure and description of the Barbary cow in the *Mém. pour servir à l'hist. des animaux, part. 2. p. 24. tab. 39.*



of the muzzle, and in the disposition of the bones of the head, which, as in the ox, jut not out behind farther than the frontal bone. These relations in external structure, joined to its antient name being forgotten, are the reasons why, in modern times, it has obtained the compound denominations of *buseclaphus*, *bull-flag*, *bucula-cervina*, *cow-bind*, *Barbary cow*, &c. Even the name *bubalus* comes from *bubulus*, and has been applied to it on account of the similarity of this animal to the ox.

The head of the bubalus is narrow; the eyes are placed very high; and the front is short and narrow. The horns are large, black, permanent, and furnished with large rings. They spring near each other, but recede considerably at their extremities. They bend backward, and are twisted spirally*. His shoulders are so high, that they form a kind of bunch on the withers. The tail is nearly a foot long, and garnished with a tuft of hairs at the point. The ears are similar to those of the *antilope*. Kolbe† has given

* See *Mem. pour servir à l'hist. des animaux*, part. 2. p. 24. tab. 39.

† The African elk.—Its head is beautiful, and resembles that of the stag, but it is smaller in proportion to the size of the body. Its horns are about a foot in length. Near the head they are rugged, but straight, uniform, and pointed at the extremities. Its neck is free and beautiful. The upper lip is a little larger than the under. Its limbs are long, thin, and delicate; and its tail is about a foot in length. The hair which covers its body is soft, smooth, and of an ash-colour.—The African elk weighs about four hundred pounds; *Descript. du Cap de Bonne-esperance*, par Kolbe, tom. 3. chap. 4.

given to this animal the appellation of *elk*, though it has no other resemblance to the elk than in its hair being more slender at the root than in the middle, or at the point, which is peculiar to those two animals; for, in almost every quadruped, the hair is always grosser at the root than in the middle, or at the point. The hair of the bubalus is nearly of the same colour with that of the elk, though it is much shorter, softer, and less bushy*. These are the only resemblances between the elk and bubalus; for they differ in every other particular. The horns of the elk are larger and heavier than those of the stag, and are likewise renewed annually. The horns of the bubalus, on the contrary, never fall off, but continue to grow during life, and resemble, in figure and texture, those of the gazelles. He resembles the gazelles still more in the figure of his body, the lightness of his head, the length of his neck, the position of his eyes, ears, and horns, and in the form and length of his tail. The gentlemen of the Academy of Sciences, to whom this animal was presented under the name of the *Barbary cow*, and who adopted that denomination, have not failed to recognise it to be the *bubalus* of the antients. Though we have rejected this compound appellation, we hesitate not to copy here their exact description, by which it appears

* The habit of body, the legs, and the neck of this animal, give it a stronger resemblance to a stag than to a cow, of which

appears that this animal is not a gazelle, a goat, a cow, an elk, or a stag *, but that it is a particular and distinct species. Besides, it is the same with that described by Caius † under the name

which last he has only the horns, and even these differ considerably from those of the cow. They spring very near each other; because the head is here extremely narrow; but, in the cow, the front is very large. They are about a foot long, black, bended backward, twisted spirally, and so used before and above, that the elevations of the screw were almost entirely effaced. The tail exceeded not thirteen inches in length, including the tuft of hair at the point, which was three inches long. The ears resembled those of the gazelles, the inside being garnished, in some places, with white hair; the rest was naked, and exhibited a skin perfectly black and smooth. The eyes were high and so near the horns, that the head seemed to have no front. There were only two very thin, short seats, which render this animal very different from our cows. The shoulders were so high, that they formed a kind of bunch on the withers.—This animal seems rather to be the bubalus of the antients than the small African ox described by Belon; for Solinus compares the bubalus to the stag; Oppian gives him horns turned backward; and Pliny says, that he partakes of the calf and stag; *Mem. pour servir à l'hist. des animaux, part. 2. p. 25.*

* The bubalus is separated from the stag-kind by two essential characters: 1. The horns never shed; 2. The bubalus has a gall-bladder, which is wanting in the stag, the fallow-deer, the roebuck, &c. The gall-bladder, say the gentlemen of the academy, was placed on the right side; its internal half was attached to the liver, and the membrane which formed the external half was thin, delicate, and folded, being entirely void of gall; *Mem. pour servir à l'hist. des animaux, part. 2. p. 29.*

† Ex Mauritaniae desertis locis (inquit Job. Caius Anglus,) ad nos adventum est animal bifulco vestigio, magnitudine cervae, forma et aspectu inter cervam et juvencam; unde ex argumento

6 THE BUBALUS, &c.

name of *buselaphus*; and I was surprised that the gentlemen of the Academy omitted this remark, as all the characters ascribed by Caius to his *buselaphus* correspond with their Barbary cow.

In the Royal Cabinet there is, 1. A skeleton of the bubalus, which had been described and dissected by the gentlemen of the Academy; 2. A head, which is much larger than that of the skeleton, and the horns are also thicker and

argumento voco *Buselaphum* seu *Bovi-cervum*, *Moschelaphum* seu *Buculam-cervinam*: Capite et aure longa atque tenui, tibia et ungula gracili ut cervae, ita ut ad celeritatem videatur factum animal. Cauda pedali longitudine et paulo amplius, forma caudae vaccinae quam simillima, sed brevitate accedens propius ad cervinam: Natura quasi ambigente cervae esset an vaccae, per superiora rufa et lenis, per ima nigra et hirta. Colore corporis fulvo seu rufo undique pilo, sessile cuteque aequato, in fronte stellatim posito, at sub cornibus per ambitum erecto: Cornibus nigris, in summum levibus, caetera rugosis, rugis ex adversa parte sibi vicinioribus, ex averfa ad duplam aut triplam latitudinem a se diductis. Ea cornua primo sub ortu digitali tantum latitudine distantia, paulatim se dilatant ad mediam usque sui longitudinem et paulo ultra, qua parte distant palmos tres cum semisse, tum se redeunt leviter et recedunt rursus in aversum, ita ut extrema cornua non distent nisi palmorum duorum digitorum trium et semissis intervallo: Longa quidem sunt pedem unum et palmum unum crassa, vero in ambitu ad radices palmos tres. Caput a vertice, qua parte linea nigra inter cornua dividitur, ad extremas nares, longum est pedem unum palmos duos et digitum unum; latum qua est latissimum, in fronte videlicet paulo supra oculorum regionum, digitos septem: Crassum in ambitu qua maximum est pedem unum et palmos tres. Dentes habet octonos, ordine caret superiori et ruminat; ubera sunt duo, corpori aequata, quo constat juveneam esse necdum foetam; Caius de *Buselapho*. *Gesner, Hist. quad. p. 121.*

and longer; 3. A portion of another head, with horns as large as the former, but whose figure and direction are different. Hence in the bubali, as well as in the gazelles, antilopes, &c. there are varieties in the size of the body and the figure of the horns. But these differences seem to be too inconsiderable to constitute distinct species.

The bubalus is very common in Barbary, and in all the northern parts of Africa. He has nearly the same dispositions with the antilopes; and, like them, his hair is short, his skin black, and his flesh is good eating.

The antelope has a long, slender, and slightly curved horn, with a ridge on one side, and a small, sharp, and pointed process at the base. The horn is of a pale brown colour; they are close at the base, and two feet seven inches and a half distant at the point, which are round and sharp. In the upper jaw, there is a hard, horny substance disposed in ridges. The length of the horn is nine feet, and the height four. The body is long and slender; the legs are slender; the face is brown and marked with two white lines proceeding from the corner of each eye, and running above the nose. The colour is generally of a reddish cast mixed with grey. From the tail, along the top of the back, to the shoulder, there is a white stripe; from this are seven others, four running downwards to the hind parts towards the belly. On the upper part of the neck is a short mane. Between the neck, from the throat to the breast, the long mane hangs down. The tail and belly are grey. The tail is two feet long, brown above, white beneath, and black at the end. The mane is grey.

THE CONDOMA, or STRIPED AN- TILOPE*

THE Marquis de Marigny, who never loses an opportunity of encouraging arts and sciences, showed me in his cabinet the head of an animal, which, at first sight, I took to be that of a large bubalus. It resembles the head of

* The striped antelope has smooth horns twisted spirally, compressed sidewise, with a ridge on one side following the wreaths; they consist of three bends, are three feet nine inches long, and of a pale brown colour; they are close at the base, and two feet seven inches and a half distant at the points, which are round and sharp. In the upper jaw, there is a hard horny substance disposed in ridges. The length of the animal is nine feet, and the height four. The body is long and slender; the legs are slender, the face is brown and marked with two white lines proceeding from the corner of each eye, and uniting above the nose. The colour in general is of a reddish cast mixed with gray. From the tail, along the top of the back, to the shoulders, there is a white stripe; from this are seven others, four pointing towards the thighs, and three towards the belly. On the upper part of the neck is a short mane. Beneath the neck, from the throat to the breast, are some long hairs hanging down. The breast and belly are gray. The tail is two feet long, brown above, white beneath, and black at the end; *Pennant's Synops. of quad.*

p. 31.

Strepsiceros; Cui opusc. p. 56. Gesner. quad. p. 309. Icon. 31.

Antelope strepsiceros; Pallas Miscel. 9. spicil. 17.

*Cerf du Cap de Bonne-esperance; Hist. et Com. Acad. Pa-
latin. tom. 1. p. 487.*

of our largest stags. But, instead of solid horns, like those of the stag, it had two large, hollow horns, with a ridge like those of the he-goat, and a double flexion, like those of the antilopes. In searching the royal cabinet, I found two horns which belonged to this animal. The first had been brought from the King's wardrobe, without any title or name. The second I had from M. Baurhis, commissary of the navy, under the name of the *Condoma* of the Cape of Good Hope; which name we have adopted, because the animal has not hitherto been described or denominated.

From the length, thickness, and especially the double flexion of the horns, the condoma makes a near approach to the *Strepsiceros* * of Caius.

VOL. VII.

B

The

* *Strepsicerotis cornua tam graphice descripsit Plinius, atque Iyris tam apposite comparavit, ut longiore verborum ambitu opus non sit. Ergo hoc tantum addam: Ea esse intus cava, sed longa pedes Romanos duos palmos tres, si recto ductu metiaris: Si flexo, pro natura cornuum, pedes tres integros. Crassa sunt, ubi capiti committuntur, digitos Romanos tres cum semisse. Describuntur in ambitu palmis Romanis duobus et dimidio, eo ipso in loco. In summo, levore quodam nigrescunt, cum in imo fusca magis et rugosa sint. Jam inde a primo ortu sensim gracilescent, et tandem in acutum exeunt. Pendent, una cum facie sicca per longitudinem dimidiata, libras septem uncias tres et semissem. Facies, quae adhuc superest juncta cornibus, et frontis cervicisque pilus, loquuntur *Strepsicerotem* animal esse magnitudine fere cervina, et pilo rufo ad instar cervini. Sed an nare et figura corporis cervina sit, ex facie nihil habeo certi dicere, cum nares diuturni temporis usu detritae sint, et facies eadem de causa hinc inde glabra sit; conjiceres tamen ex eo quod superest eum propius accedere ad cervum aut platycerotem; Caius, apud Gesnerum, de quad. p. 295.*

10 STRIPED ANTILOPE.

The figure, and even all the dimensions of the horns, are almost perfectly the same. From this correspondence in the size and figure of the head and horns, we may presume that the condoma and *strepsiceros* of Caius are the same animal, especially when the following reflections are attended to: 1. Caius, it is obvious, was deceived, when he made this animal the *strepsiceros* of the antients; for the *strepsiceros* of the antients is unquestionably the *antilope*, whose head is very different from that of the stag. Now Caius tells us, that the head of his *strepsiceros* resembled that of the stag; and, therefore, it could not be the *strepsiceros* of the antients. 2. Caius's animal, like the condoma, had thick horns, above three feet long, covered with rugosities, instead of rings or tubercles; but the horns of the *strepsiceros* of the antients, or *antilope*, are much thinner and shorter, having both rings and tubercles. 3. Though the horns of the condoma in the cabinet of the Marquis de Marigny, as well as those which were brought from the King's wardrobe, had been polished by friction, it is easy to perceive that they never had rings. This fact is farther demonstrated by the horn sent to me by M. Baurhis, which had never been touched, and yet it had only rugosities like the he-goat, and no rings like the *antilope*. Now, Caius himself tells us, that the horns of his *strepsiceros* had rugosities only. Hence this *strepsiceros* is
not

not that of the antients, but the animal we are here treating of, which possesses all the characters which Caius attributes to his.

In examining the writings of travellers, we have found nothing that approaches so near to the genuine idea of this animal, which is so remarkable for its size, and particularly the largeness of its horns, as the quadruped mentioned by Kolbe under the denomination of the *wild-goat* of the Cape of Good Hope. 'This goat,' says he, 'which has received no name from the Hottentots, and which I have called the *wild-goat*, is remarkable in many respects. It is of the size of a large stag; its head is very beautiful, and adorned with two smooth horns, which are bended and pointed. They are three feet in length, and their extremities are two feet asunder.' These characters seem to correspond exactly with the animal under consideration: But, having seen the head only, we cannot be equally certain that the rest of Kolbe's description* will apply to it with equal precision. Future observations alone can determine the truth of what now appears to be extremely probable.

The

* From the front, and along the whole back as far as the tail, there is a white stripe; another, of the same colour surrounds the lower part of the neck; other two of the same kind surround the body, the one behind the fore-legs, and the other before the hind-legs. The hair on the rest of the body is gray, with some reddish spots, except that on the belly, which is white. The beard is gray and very long. The limbs, though long, are well proportioned; *Descript. du Cap de Bonne-esperance, par Kolbe, tom. 3. p. 42.*

The GUIB, or HARNESSSED ANTILOPE*.

THIS animal, though not taken notice of by any naturalist or traveller, is very common in Senegal, from which M. Adanson brought a skin of it, and presented it to the royal cabinet. It resembles the gazelles, and particularly the nanguer, in the size and figure of the body, in the lightness of the limbs, in the form of the head and muzzle, in the eyes and ears, and in the length of the tail and the want of a beard. But all the gazelles, and especially the nanguers, have their bellies of a fine white colour; while the breast and belly of the guib are of a deep chesnut. It differs likewise from the gazelles by its horns, which are smooth, without transverse rings, and have two longitudinal ribs, the one above and the other below, forming a spiral twist from the base to the point: They are also somewhat

* The harnesssed Antelope has strait horns, nine inches long, pointing backward, with two spiral ribs. The ears are broad. The colour is a deep tawny. Beneath each eye there is a white spot. The sides are most singularly marked with two transverse bands of white, crossed by two others from the back to the belly; the rump with three white lines pointing downward on each side. The thighs are spotted with white. The tail is ten inches long, covered with long rough hairs; *Pennant's Synops. of quad. p. 27.*

Antilope scripta; Pallas Miscel. 8. spicil. 15.

Plate CXCVIII.



J. Bell sculpt.

GUMB.

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somewhat compressed. These characters make the guib approach the goat more than the gazelle. It is, however, neither the one nor the other, but an intermediate species. This animal is remarkable for white bands upon a chestnut ground colour. * These bands are disposed along and cross the body, like a harness. He lives in society, and great flocks of them are found in the plains and woods of the country of Podor. As M. Adanson is the first who remarked the guib, we shall subjoin his description, which he obligingly communicated to us *.

The

* Guib, among the Negroes, Oualofes or Jalofes. *Gazella cornibus rectis spiralibus; caput, rostrum, nasus, oculi, uti Nanguer. Cornua recta spiralia, spira prima nigra, nitida, subcompressa, angulis duobus lateralibus, antice convexa, pone plana, apice conico teretia Aures uti Nanguer intus subnuda. quinque pollices longae. . . . Cauda decem pollices longa, pilis longis hirta. Dentes duo et triginta. Pedes uti Nanguer. Corpus totum fere fulvum. Albae fasciae sex utrinque in dorso transversae, et fasciae albae duae longitudinales ventri laterales. Maculae albae utrinque octo ad decem supra femora, orbiculatae. Collum subtus album et genae albae; latera pedum interiora alba, macula alba paulo infra oculos. Frons media nigra, linea supra dorsum longitudinalis nigra, venter subtus niger, pars antica pedum anteriorum, ungulae, et cornua nigra; longitudo ab apice rostri ad anum quatuor pedes cum dimidio; altitudo a pedibus posticis ad dorsum duos pedes octo pollices; pili omnes brevissimi, lucidi, vix unum pollicem longi, corpori adpressi. Pulchrum animal a D. Andriot missum. M. S. communicated by M. Adanson to the royal Academy of Sciences.*

The GRIMM, or GUINEA ANTILOPE*.

THIS animal is known to the naturalists by the appellation of the *Grimm goat* only, which, as we are ignorant of the name given it in its native country, we shall adopt. There is a figure of it in the German † *Ephemerides*, which has been copied in the Academy Collection ‡. Dr Herman Grimm was the first who mentioned this animal; and what he says concerning it was copied by Mr Ray, and afterwards

* The Guinea antelope has strait black horns, slender and sharp pointed, not three inches long, and slightly annulated at the base. The height of this most elegant animal is about eighteen inches. The ears are large, and the eyes dusky; Below the eyes is a large cavity, into which exudes a strong scented oily liquid. Between the horns is a tuft of black hairs. The colour of the neck and body is brown, mixed with cinereous, and a tinge of yellow. The belly is white. The tail is short, white beneath, and black above; *Pennant's Synops. of quad. p. 28.*

Capra sylvestris Africana Grimmii; Rait. Synops. quad. p. 80. Klein quad. p. 19.

Tragulus in medio capite fasciculum pilosum erectum gerens. . . Tragulus Africanus. Le chevrotain de l'Afrique; Brisson regn. anim. p. 97.

Moschus Grimmiæ, capite fasciculo tophoso; Linn. Syst. Nat. p. 92.

Antilope Grimmiæ; Pallas Miscel. 10. tab. 1. spicil. 38. tab. 3.

† *Ephem. Nat. Cur. an. 14. obs. 57.*

‡ *Collect. Academ. tom. 3. pl. 26.*

wards by all the nomenclators. Though his description be incomplete *, he points out two characters so remarkable, that we easily recognised a head of a Senegal animal, sent us by M. Adanson, to belong to the grimm. The first is an enormous cavity below each eye, which penetrates so deep as to leave only a thin plate of bone between each cavity and the partition of the nose: The second is a bushy tuft of hair reflected backward on the top of the head. These characters sufficiently distinguish the grimm from all the other goats or gazelles. It has, however, a resemblance to both, not only in the form of the body, but even in the horns, which are annulated toward the base, furrowed longitudinally, like those of the gazelles, and, at the same time, directed horizontally backward, and very short, like those of the small African goat, formerly mentioned. Besides, this animal being much smaller

* In a castle, near the Cape of Good Hope, says Dr Herman-Nicolas Grimm, I saw a very singular species of wild goat. It was of an obscure ash-colour. On the top of its head there was a tuft of erect hairs; and, between each eye and nostrils, a cavity filled with a yellowish humour, which was oily and viscid, and, when exposed to the air, became black and hard: This substance, the odour of which participates both of castor and musk, renews successively after the cavities are emptied. I was assured that the cavities had no communication with the eyes, and that the thick humour they contained was different from that collected in the large angle of the eyes of stags and several other animals; *Ephem. des curieux de la Nature, decad. 2. ann. 4. 1686. Obs. 57. Collection Academique, Dijon, tom. 3. p. 696. tab. 26.*

smaller than the goats, gazelles, &c. and having very short horns, seems to constitute the shade between the goats and the *chevrotains*, or small antilopes.

In the species of the grimm, the males alone appear to have horns; for the individual described and engraved by Dr Grimm had no horns; and the head given us by M. Adanson had two short horns nearly concealed among the hair, though still apparent enough to be seen by the drawer: Besides, in the history of the *chevrotains*, or small antilopes, we will find, that, in the royal or Guinea antelope, the male alone has horns; which makes it probable that the same is the case with the grimm species, which is more allied to the small antilopes than to any other animal.

S U P P L E M E N T.

Mess. Vofmaër and Pallas have given descriptions of this beautiful animal, and a good figure of it, which we have here copied. It is worthy of remark, that the horns of the grimm, preserved in the Royal Cabinet, bend a little forward at their points; while those described by Vofmaër and Pallas bend a little backward. The ears of the former are round at the extremities; but

but those of the latter terminate in a point. Is this a natural variety, or an error in the drawing? Vosmaër and Pallas's grimm has the point of the nose black, a black band extending from the nose along the chanfrin, and ending at the tuft of hair placed on the top of the front. The head in the Royal Cabinet has not this band. These slight differences, however, are not sufficient to constitute distinct species.

M. Vosmaër calls this animal the *small beautiful buck* of Guinea, probably on account of its elegance. But I shall retain the name of *grimm*; because, under that appellation, it is known to all the naturalists.

' This animal,' M. Vosmaër remarks, ' was a male, and one of the most beautiful and delicate creatures I ever saw. It was sent from Guinea to Holland along with thirteen others of the same species, and of both sexes. Twelve of them died during the voyage, and in this number were all the females; so that there remained alive only two males, which were put into the menagerie of the Prince of Orange, where one of them died in the winter 1764. According to our information, the females have no horns. These animals are extremely timid. Any noise, and particularly thunder, terrifies them. When surprised, they express their fear by blowing suddenly and with great force through their nose.'

' The one which is still alive (in 1766) was
 ' at first wild ; but has now become pretty tame.
 ' It listens when called by its name *Tetje*, and,
 ' when gently approached, with a piece of bread
 ' in the hand, it allows its head and neck to be
 ' stroaked. It is so cleanly, that it suffers not
 ' the smallest particle of dirt to remain on any
 ' part of its body ; for this purpose, it often
 ' scratches itself with one of its hind feet. This
 ' is the reason why it has received the appella-
 ' tion of *Tetje*, from *Tettig*, which signifies
 ' neat or clean. However, if a person continues
 ' for some time to rub its body, a white powder
 ' adheres to his fingers, like that which proceeds
 ' from horses when they are curried.

' This animal is extremely agile ; and, when
 ' reposing, it frequently keeps one of its fore-feet
 ' in an elevated and bended position, which gives
 ' it a very agreeable appearance. It is fed with
 ' bread, rye, and carrots : It likewise spontane-
 ' ously eats potatoes. It is a ruminating animal,
 ' and discharges its excrements in small balls,
 ' the size of which is considerable in propor-
 ' tion to the magnitude of the creature.'

Dr Herman Grimm tells us, that the fat, vis-
 cid, yellow humour, which is secreted in the
 cavities above the eyes of this animal, has an
 odour that participates of musk and castoreum.
 M. Vosmaër remarks, that, in his live subject,
 this viscid matter had no odour of any kind ;
 and that the figure given by Grimm is extreme-
 ly

ly erroneous; for it represents a tuft of hair on the forehead, which has no existence; and his subject, which was a female, had no horns; 'But ours,' continues M. Vosmaër, 'is a male, and has large horns in proportion to its size: And, instead of this high, erect tuft of hair, it had only a small quantity, which rose a little to a point between the horns. It is about the size of a kid of two months old;' (though it was probably three or four years of age; because it was sent from Guinea before the winter 1764, and M. Vosmaër published his description of it in the year 1767.) 'Its limbs are fine, and well suited to its body. Its head is beautiful, and pretty much resembles that of a roebuck. The eye is lively and full of fire. The nose is black and naked, but always moist. The nostrils are shaped like a long crescent. The edges of the muzzle are black. The upper lip, though not divided, has the appearance of being separated into two lobes. There is no hair on the chin; but, a little higher, there are, on each side, a kind of small whiskers; and, under the throat, a sort of wart garnished with hair,' (which brings this animal still nearer to the goat-kind, most of whom have similar warts or excrescences on their throats).

'The tongue is rather round than oblong or pointed. . . . The horns are black, finely furrowed from top to bottom, and about three inches

‘ inches in length: They are perfectly straight,
 ‘ and terminate in a very sharp point. At the
 ‘ base, they are nearly three quarters of an inch
 ‘ thick; and they are ornamented with three
 ‘ rings, which rise a little backward.

‘ The hairs on the front are straighter than the
 ‘ others; and, at the origin of the horns, they are
 ‘ coarse, gray, and crisped. Between the horns,
 ‘ the hair is more erect, and forms a kind of
 ‘ pointed black tuft, from which a stripe of the
 ‘ same colour descends and loses itself in the
 ‘ nose.

‘ The ears are large, and have, on the outside,
 ‘ three cavities or depressions, directed from the
 ‘ top to the bottom. Internally, and at the sum-
 ‘ mit, the ears are garnished with white, short
 ‘ hair: The rest of the ears are naked and black.
 ‘ The eyes are pretty large, and of a deep brown
 ‘ colour. The hair on the eye-lids is black,
 ‘ close, and long, especially on the upper eye-lid.
 ‘ Above the eyes there are some long hairs; but
 ‘ they are thinly dispersed.

‘ On both sides, between the eyes and nose,
 ‘ we see those remarkable cavities by which this
 ‘ animal is easily distinguished. These parts are
 ‘ naked and black. In the middle, a cavity or
 ‘ depression appears, which is somewhat callous,
 ‘ and always moist. A small quantity of a vis-
 ‘ cid, gummy humour, distills from it, which
 ‘ soon hardens, and becomes black. The ani-
 ‘ mal seems occasionally to throw off this ex-
 ‘ crementitious

Plate CXIX.



W. H. Smith del.

GRIMM



'crementitious matter; for we find it hard and
'black on the stakes of his lodge, as if it had
'been wiped off. With regard to the odour,
'mentioned by Dr Grimm and his followers,
'I could never discover it.

'The under part of the neck, which is moderately long, is covered with pretty coarse
'hair, of a yellowish gray colour, like that of the
'head. But the throat and upper part of the
'neck is white.

'The hair on the body is black and stiff,
'though it be soft to the touch. That on the
'anterior parts is of a fine bright gray colour;
'farther back it is a bright brown; toward the
'belly it is gray; and, lower down, it is perfectly white.

'The legs are extremely slender, and blackish
'near the hoofs. The anterior parts of the fore-
'feet, as far as the knees, are adorned with a
'black band. They have no heels; but, in
'their place, there is a slight excrescence. The
'feet are cloven, and provided with beautiful,
'black, pointed, smooth hoofs.

'The tail is very short, white, and marked
'above with a black band. With regard to the
'organs of generation, they are firmly inclosed
'in a black scrotum, hang down between the
'legs, and are provided with a large prepuce.'

The

The CHEVROTAINS, or Small ANTILOPES*.

THE name *Chevrotain* (*Tragulus*) has been applied to those small animals of the warm regions of Africa and Asia, which are mentioned by almost every traveller under the denomination of the *small stag*, or the *small hind*. They, indeed, resemble the stag in the figure of the muzzle, in lightness of body, in the form of the limbs, and in the shortness of the tail. But they differ from him prodigiously in size, the largest not exceeding the magnitude of a hare. Besides, some of them want horns entirely; and, in those which have horns, they are hollow, annulated, and pretty similar to those of the gazelles. Their small cloven foot has also a greater resemblance to the foot of the gazelle than to that of the stag; and their want of pits, or depressions under the eyes, removes them equally from the gazelles and the stags. In this article they approach the goats: But, in fact, they are neither stags, gazelles, nor goats, but constitute one or several distinct species. Seba gives a description

* In modern Latin, *Tragulus*; in Senegal, *Guevei*. According to M. Adanson, the smallest kind is called *Guevei-kaïor*, because it inhabits the province of *Kaïor*, which includes Cap-Verd and the country adjacent.

scription and figures of five chevrotains*. The first he calls *the small African hind from Guinea, which*

* Tabula quadragesima et tertia, No. 1. Cerva parvula, Africana, ex Guinea, rubida, sine cornibus. Licet admodum pusilla haec sit, tamen sua in specie maxima est; quum congeneres ejus plerumque aliquantum minores deprehendantur. Caput, magni cervi aemulum, cornibus tamen caret. Cursu saltuque velocissimae sunt, longis, gracilibusque pedibus, in binas ungulas, uti in magnis cervis, concinne fissis, innixae: Neque vero calcaneum in parvam ungulam elongatur, uti in proceris, sed talus crassus et rotundus est. Pilus dorsi ex fusco rubet; ad ventrem et sub collo albicat. Cauda minus longa, et longis dispersisque pilis vestita, ex fusco, rubro, et albo variegatis. Suffraginis postica facies in hac dilutissime spadicea est. Foemellam hic representamus. Pabulum horumce animalculorum cymae sunt graminum, aliarumque herbarum. Altissimos autem montes conscendunt, difficillime, nec nisi ope tendicularum, captandae. Summas inter delicias ciborum, et pro ferina optima habentur; quo etiam nomine dignissimorum munerum administratoribus, illis in locis, dono dantur.

No. 2. Hinnulus, seu cervus juvencus, pergracilis, Africanus. Salientis hic in gestu constitutus, tenui gracilique est corpore, atque articulis, instar canis venatici, priori congener, et concolor. Auriculae medioeriter prolixae sunt. Cauda, sursum recurvata, quasi crispata est. Maxilla inferior insignes dentes a primo ortu gerit. Pedes, tanquam res pretiosa, aurum circumclusi, loco pistillorum, ad Nicotianam in fistulas adigendam, usurpantur. Sub lit. A. ejusmodi repraesentatur.

No. 3. Cervus juvencus, perpusillus, Guineensis. Minima haec species est inter omnes quas haecenus hisce in oris videre licuit: Quanquam in nostro musaeo pedes minoris adhuc aservemus, prout lit. B. demonstrat. Dantur et aliae species, quae bina, nigricantia, et acuminata cornicula gerunt; cujusmodi sub lit. C. exhibuimus. Quotannis novo annulo notantur cornicula, quorum e numero aetas animalculi supputatur: Id, quod in bobus quoque obtinere, notissimum est. Summus Russorum Imperator, quando musaei mei perlustrandi gratia
ad

which is reddish, and without horns ; the second, the fawn or young stag of Africa, which is very delicate ; the third, the young, very small stag of Guinea ; the fourth, the small hind of Surinam, which is reddish, and marked with white spots ; the fifth, the African stag, with reddish hair. Of these five chevrotains, the first, second, and third, are evidently the same animal. The fifth, which is larger than the three first, and whose hair is much longer, and of a deeper yellow colour, seems to be only a variety of the first

ad me invisere dignabatur, centum mihi aureos offerebat, si tam pusillum ipsi cervum procurare possem : Sed votis excidi, quidquid impenderim operae.

Tabula quadragesima et quarta. No. 2. Cervula Surinamensis, subrubra; albis maculis notata. Caput, pectus, abdomen, et pedes exceperis, quae unicoloria sunt; reliquum, ex rufo luteum, maculis albis undique tygridis in modum, variegatur; auriculae grandes, longae; cauda brevis, obtusa. Cursus rapiditate incredibili vel magnum cervum superat. Memorabile est, cervos Americanos adeo pusillos esse: Quum dentur, leporem qui magnitudine haud excedunt; et omnium maxima species altero tanto circiter major sit, quam quae hac tabula repraesentatur. Cornua vero numquam gerunt, et pro sapidissima ferina habentur.

Tabula quadragesima et quinta. No. 1. Cervus Africanus, pilo rubro. Parvus quidem est; at ista tamen in specie cervorum maximus, quem hic repraesentamus, ex oris Guineae oriundus. Egimus de his animalculis jam praegressis in tabellis. Interim ut, quantum licet, specigrum exhiberetur varietas, hunc quoque aeri curavimus incidi; siquidem et specie et pilo discrepet ab aliis. Pilus ei longior est, coloris ex fusco longe obscurioris, quam in praecedentibus. Pedes etiam et crura ejus longiora sunt, et concinne admodum subrefecta. Caeterum cum prioribus convenit; *Seba, vol. 1. p. 70, et 73.*

first kind. The fourth, which Seba mentions as a native of Surinam, appears to be a second variety of this species, which is found in Africa, but not in the southern regions of Asia; and I am inclined to think, that Seba has been ill informed, when he tells us, that this animal came from Surinam. All voyagers mention these small stags or chevrotains, as being found in Senegal, Guiney, and the East-Indies; but no traveller affirms that he has seen them in America. If Seba's spotted chevrotain really came from Surinam, we must presume that it had been transported from Guiney, or some other southern region of the Old World. But there seems to be a second species of chevrotain, different from all those we have mentioned, which are only simple varieties of the first. This second species has horns, which are only an inch in length, and as much in circumference. These small horns are hollow, black, a little bended, very sharp at the points, and surrounded at the base with three or four transverse rings. In the King's cabinet, we have the feet of this animal, and one of its horns; and these parts demonstrate, that it is either a chevrotain, or a very minute gazelle. Kolbe, when mentioning this species, says, that its horns were similar to those of the stag, and that they have branches in proportion to their age*. This is an evident

VOL. VII. D blunder,

* In Congo, Viga, Guiney, and other places near the Cape of

blunder, as appears from a bare inspection of the horns themselves.

The figure of these animals is elegant, and their members are finely proportioned to their size. They make prodigious bounds; but it is probable that they cannot run long; for the Indians overtake them in the course*. The Indians chase these animals, and kill them with sticks or small darts. They are in great request, on account of the delicacy of their flesh.

From comparing the relations of voyagers, it appears, 1. That the chevrotain, whose figure we have given, and who wants the horns, is peculiar to

of Good Hope, we find a species of goat which I call the *Congo goat*. It is not larger than a hare; but its beauty and symmetry are truly admirable. Its horns resemble those of the stag, and have also branches in proportion to their age. Its legs are very handsome, and so small, that the inferior part of them is often used as a tobacco stopper. They are mounted with gold or silver; *Descript. du Cap de Bonne-esperance, par Kolbe, tom. 3. p. 39.*

* The inhabitants of a small island near Java bring hinds of the size of a hare, which the Indians take in the course; *Voyage de la Gentil, tom. 3. p. 73. et p. 93.* There is still another kind of little quadrupeds. They are extremely handsome; their horns are black, and their legs, though proportioned to the size of their bodies, are so slender, that some of them exceed not, in thickness, the stalk of a tobacco-pipe. I send you one ornamented with gold, &c.—These small animals are extremely fleet in the course, and make surprising bounds. I have seen some of those which we seized spring over a wall of ten or twelve feet high. The Negroes call this animal the *King of the Harts*; *Voyage de Guinée, par Bosman, p. 252.*

to the East-Indies * ; 2. That the one with horns is the chevrotain of Senegal, called *Guevei* by the natives † ; 3. That the male *guevei* has horns ‡, and that the female has none ; 4. That the

* The Guiney Musk is nine inches and a half long. The head, legs, and whole upper part of the body are tawny, and the belly is white. It has no spurious hoofs. There are two very broad cutting teeth in the lower jaw, and on each side of them, three others very slender. In the upper jaw there are two small tusks. The ears are large, and the tail an inch long. In the possession of Mr Gay of York-Buildings, who said it came from Guiney. M. de Buffon says it is found in the East Indies; *Pennant's Synops. of quad.* p. 59.

Tragul. Guineensis; *Briffon. quad.* p. 66.

Tragul. Indicus; *Klein, quad.* p. 21.

Moschus pygmaeus, pedibus humano digito angustioribus; *Linn. Syst. Nat.* p. 91.

† The Royal Antelope has very short, straight horns, black and shining as jet, and scarce two inches long. The ears are broad, and the height not above nine inches. The legs are not thicker than a goose quill. The colour is a reddish brown. The females want horns; *Pennant's Synops. of quad.* p. 28.

King of the Harts; *Bosman's voyage*, p. 236.

Petite biche; *Des Marchais, tom. 1.* p. 312.

Cervula parva Africana; *Seba Mus. tom. 1.* p. 70. tab. 43. *Adanson's voyag.* p. 207.

‡ In the kingdom of Acara, on the Gold Coast, we find hinds so small that they exceed not eight or nine inches in height. Their legs are not thicker than a goose quill. The males have horns, which bend back on the neck, and are two or three inches long. They have no branches or antlers, but are twisted, and as black and shining as jet. These small animals are very tame, fawning, and caressing; but they are so extremely delicate, that no attempts to transport them into Europe have ever succeeded; *Voyage de Desmarchais, tom. 1.* p. 31. See also *L'Hist. gen. des voyages, par M. l'Abbé Prevost, tom. 4.* p. 75.

the chevrotain, spotted with white, and which Seba says is brought from Surinam, is, on the contrary, a native of the East-Indies, and particularly of Ceylon *, where it is called *Memina*. We must, therefore, conclude, that there are only two known species of chevrotains, the memina, or Indian kind, without horns, and the guevei or chevrotain of Guiney, with horns; that the five species of Seba are only varieties of the memina; and that the smallest kind, called *Guevei-kaïor* in Senegal, is only a variety of the guevei.

None of these small animals can subsist, except in very warm climates. They are so extremely delicate, that it is with the utmost difficulty they can be transported alive into Europe, where they soon perish. They are gentle, familiar, and most beautifully shaped. Beyond all comparison, they are the smallest cloven-footed animals. From this last character, they should produce but few young at a litter. From their
minute-

* In the island of Ceylon, there is an animal called *Memina*, which is not larger than a hare, but has a perfect resemblance to the fallow-deer. Its colour is gray, spotted with white, and its flesh is excellent eating; *Knox's Hist. of Ceylon*, p. 21. See also *L'Hist. gen. des voyages, par M. l'Abbé Prevost*, tom. 8. p. 545.

Indian Musk: The length is one foot five inches, and the weight five pounds and a half. It is of a cinereous colour, with the throat, breast, and belly white. The sides and haunches are spotted, and barred, transversely, with white. The ears are long and open, and the tail very short; *Pennant's Synops. of quad.* p. 59.

minuteness, on the contrary, they ought to bring forth a great number. On this subject, we must wait for information from those who have an opportunity of observing their oeconomy. We imagine that they bring forth but one or two at a time, like the gazelles, roe-deer, &c. But perhaps they produce more frequently; for they are very numerous in India, Java, Ceylon, Senegal, Congo, and in all the very warm countries; and none of them are found in America, or in any of the temperate regions of the Old Continent,

S U P P L E M E N T.

We have here added the figure of a chevrotain, which differs from that in the original work; where it was remarked, that the skin of the chevrotain is variegated with white spots, and that Seba maintained that it was found in Surinam. It exists not, however, in America, but in the East Indies, where it is called *Memina*. Under this denomination, we received the skin of a chevrotain from Ceylon, which had a perfect resemblance to the description we had given of it. By comparing this with our original figure, we will perceive that none of these animals have horns, and that they are both varieties only of the same species.

THE

THE MAZAMES.

MAZAME, in the language of Mexico, was the name of the *stag*, or rather a generic name including the *stag*, the *fallow-deer*, and the *roebucks*. Hernandez, Recchi, and Fernandes, who furnished us with this appellation, distinguish two species of mazames, both of which are very common in Mexico and New Spain. The first, and the largest, to which they give the simple name of *Mazame**, has horns resembling those of the European roebuck, that is, about six or seven inches long, with the extremities divided into two points, and a single antler. The second, which they call *Temamaçame*, is smaller, and its horns are simple, and have no antlers. These two animals appear to be

* De Mazame seu Cervis, cap. 14. — Hos (*Teletlalmame* scilicet et *Temamaçame*) ego potius computaverim inter Capreos (quam inter Cervos). — Mazames caprarum medicorium, paulove majori constant magnitudine; pilo teguntur cano et qui facile avellatur, fulvoque; sed lateribus et ventre candentibus: — Cornua gestant juxta exortum lata, ac in paucos parvosque teretes ac praeacutos ramos divisa, et sub eis oculos quarum imaginem exhibemus (fig. pag. 324.), deinde in quodam damarum genere quas *Macatlchicbilitic* aut *Temamaçame* appellant, brevissimis cornibus acutissimisque, coloris fulvi, fusci, et inferne albi, quarum quoque praestita est imago (fig. pag. 325.) *Nard. Ant. Recchus apud Hernandezium, lib. 9. cap. 14. pag. 324. et 325.*

be really roebucks, the first being the same species with the European roebuck, and the second only a variety of it. It likewise appears, that these roebucks, or mazames and temamaçames of Mexico, are the same with the *cuguacu-apara** and the *cuguacu-été* of Brasil; and that, at Cayenne, the first is called *Gariacou*, or *wood-hind*, and the second the *small cariacou*, or *Savannah hind*†. Though we have first exhibited these relations, yet we would not have presumed that every difficulty or doubt was removed, if Seba† had not given, under the denominations of

* The figure of Piso's *cuguacu-été*, p. 98. has a perfect resemblance to our roebuck; and we have only to compare it with that of Recchi's mazame, to be satisfied that it is the same animal. This *cuguacu-été* of Piso has palmated horns; yet Marcgraave, though he has given no figure, tells us, that it has no horns, and that it is the *cuguacu-apara*, which has horns with three antlers. As in the roe-deer, the female has no horns, it is probable, that the individual pointed out by Marcgraave was the female. The descriptions given of these animals by Piso and Marcgraave demonstrate that they are roebucks, perfectly similar to those of Europe.

† *Cervus major corniculis brevissimis*, wood-hind. *Cervus minor palustris, corniculis brevissimis*, the Savannah hind, so called because she generally frequents marshy grounds. In Cayenne, *hind* is the general denomination for both the female and male stag, even when the latter has his horns in the greatest perfection; Barrère, *Essai, sur l'hist. nat. de la France Equinoxiale*, p. 171.

‡ Tabula quadragesima secunda, No. 3. Mazame seu cervus cornutus, ex nova Hispania. Haec species omnino differt ab illa quam Guinea profert. Capite et collo, crassis curtisque est, et bina gerit tornata quasi cornicula, in acutum recurvumque apicem convergentia, retrorsum reclinata. Auriculæ

of *mazame* and *temamaçame*, two different animals: They are not roebucks with horns solid and palmated, but gazelles with hollow and twisted horns. They are not natives of New Spain, as this author affirms, but of Africa. These blunders of Seba have been adopted by most subsequent naturalists. They never doubted that the animals mentioned by Seba, under the
riculae grandes, flaccidae: At oculi venusti, Cauda crassa, obtusa. Pilus totius corporis subrufus est, paulo tamen dilutior qui caput et ventrem tegit. Femora cum pedibus admodum habilia.

No. 4. *Cervus Macatichichiltic* sive *Temamaçama* dictus. Horum ingens numerus per alta montium et rupium novae Hispaniae divagatur, qui gramine, foliis, herbisque victitantes, cursu saltuque velocissimi sunt. Europaeos cervos habitu referunt, sed instar hinnulorum, valde parvi. Cornua tornata, recurvatum in acumen convergunt, quae singulis annis nova spirae aucta, aetatem animalis produnt. Cornuum color coracinus. Oculi auresque magni et agiles. Dentes praegrandes et lati. Cauda pilis longis obsita; brevioribus et dilute spadiceis universum corpus vestitur. Fr. Hernandezius aliam prorsus horum ideam exhibet, putans veram hanc esse speciem capri cervarum, e quibus lap. bezoar acquiritur: Qua tamen de re diversa penitus percepimus. Notissimum est lapidem bezoar fortuita quadam concretionem, in ventriculo animalium nasci, haud secus ac in renibus et vesica hominum calculi generantur. Neque una dumtaxat animantium species lapides hosce profert; sed variae cervorum, caprarum, haedulorum, et aliorum, quorum in ventriculo plerumque isti concresecunt, nucleum seu basin, dante frustulo quodam ligni, straminis culmo aut lapillo; quae, si non comminuta nec commansa deglutuntur, in ventriculum delata, dissolvi nequeunt: His tunc ibi detentis circum accrescit calcaria quaedam crusta, sensim aucta; donec a tunica ventriculi secedens lapis, ita confusus, cum excrementis per alvum exoneretur; *Seba.*

the names of *mezame* and *temamaçame*, were not American animals, and the same with those taken notice of by Hernandez, Recchi, and Fernandes. The confusion of the names has given rise to a confusion of the animals themselves; and, of course, some naturalists have pointed them out under the name of *Chevrotains**, and others under that of *Gazelles*†, or *goats*. Linnaeus seems to have been aware of this error; for he has not copied it. He has placed the mazame among the list of stags, and he has thought, as we do, that the Mexican mazame‡ is the same animal with the cuguacu of Brasil.

To demonstrate what we have advanced, let us suppose, that there are neither gazelles nor chevrotains in New Spain, or in any other part

VOL. VII. E of

* *Tragulus*, *Temamaçame*. . . . ; *Tragulus*, *Mazame*, *Klein. de quad. p. 21.*

† *Hircus cornibus teretibus, erectis, ab imo ad summum spiraliter intortis.*—*Capra Novae Hispaniae*. La chevre de la Nouvelle-Espagne; *Brisson. regn. anim. p. 72.* (Le Mazame de Seba).—*Hircus cornibus teretibus circa medium inflexis; ab origine ad flexuram spiraliter canaliculatis, a flexura ad apicem laevibus*—*Gazella Novae Hispaniae*. La gazelle de la Nouvelle-Espagne; *Brisson. regn. anim. p. 70.* (Le temamaçame de Seba).

‡ *Bezoarticus*. *Cervus cornibus ramosis teretibus erectis: Ramis tribus. Mazama; Hernand Mex. p. 324. Cuguacu; &c. Marcgrav. Bras. p. 235. Pis. Bras. p. 98. Ray quad. p. 90. Habitat in America australi; Linn. syst. nat. edit. 10. p. 67.*
—Linnaeus, in his 12th edit. has ranked this animal among the goats, and defines it in this manner: ‘*Capra bezoarticus, cornibus teretibus arcuatis, talis annulatis, gula barbata;*’ *Linn. syst. nat. p. 96.*

of America; that there were no goats or gazelles in the New World before it was discovered, but that all those which are now there, were transported thither from the Old Continent; that the true mazame of Mexico is the same animal with the Brazilian cuguacu-apara; that the name *cuguacu* is pronounced *couguacou*; and that, by a corruption, this animal was called *cariacou* in Cayenne, from which it was transmitted to us alive, under the denomination of *cariacou*. We shall now endeavour to investigate the species of the two animals to which Seba has falsely applied the names *mazame* and *temamaçame*; for, to destroy an error, it is not enough to reject it; but its cause and effects must also be exhibited.

The gazelles and chevrotains inhabit only the warmest countries of the Old World. They cannot subsist in temperate, and far less in cold climates. Hence they could never frequent the northern regions, nor pass, by means of these regions, from the one Continent to the other. No travellers, accordingly, or historians of the New World ever pretend to have seen gazelles or chevrotains in that quarter of the globe. The stag and roebuck, on the contrary, are natives of cold and temperate climates. They might, therefore, pass, by means of the northern lands, and, accordingly, they are found in both Continents. In the history of the stag, it was shown

shown*, that the Canadian stag is the same with the European; and that he is only smaller, and has some trifling variations in the figure of his horns and the colour of his hair. We may add to what was then related, that there are as many varieties among the American as among the European stags; and yet they are all of the same species. Of one of these varieties, namely, the Corsican stag, we have given a figure†. It is smaller and browner than the common kind. We have also mentioned white stags and hinds, and have attributed this colour to their domestic state: This kind is likewise found in America‡, as well as our common and small brown stags. The Mexicans, who reared these white stags in their parks, called them *royal stags*. It is a native of Germany, commonly called the *stag of Ardennes* and *brandherts* by the Germans. It is fully as large as the French stags, from which

* See vol. IV. article *Stag*.

† See vol. IV. plate LII.

‡ Inter cervorum genera quae apud novam hanc Hispaniam adhuc mihi videre licuit (praeter candidos totos, quos reges Cervorum esse Indi sibi persuasere, nuncupantque a eo colore *Iztac mazame*, et vocatos *Tlamacaz quemacatl*) primi sunt quos vacant *Aculliam*, Hispanicis omnino similes forma, magnitudine ac reliqua natura; minores his apparent *Quarubt mazame*, sed usque adeo a caeterorum timiditate alieni, ut vulnerati homines ipsos adoriantur ac saepe numero interimant: Hos sequuntur magnitudine *Tlalhuicamazame*, qui forma et moribus essent eis omnino similes, nisi timidiore viderentur; Minimi omnium *Temamazame* sunt; *Nard. Ant. Reccebus, apud Hernand, p. 324. et 325.*

which it differs by some remarkable characters. Its hair is more bushy, and lighter under the belly; and, like the he-goat, it has long hairs upon its neck and throat, which induced both the antients* and moderns †, to give it the appellation of *trage-laphus* or *goat-bart*. The roebucks are likewise very numerous in America. In Europe, we know only two varieties, the red and the brown ‡. The latter are smaller than the former; but, in other respects, they perfectly resemble each other, and both have

* Eadem est specie (cervi scilicet) barba tantum et armorum villo distans quem *tragelaphon* vocant; non alibi quam juxta Phasin amnem nascens; *Plinii. Hist. nat. lib. 8. c. 33.*

—This race of stags is now found in the forests of Germany and Bohemia, as, in the days of Pliny, they frequented the banks of the Phasis.

† *Agricola*, *tragelaphum* interpretatur, Germanice dictam *feram ein Brandbirse*. *Tragelaphus*, inquit, et *cervus* in sylvis cubant. . . *Tragelaphus* ex hircō et cervo nomen invenit, nam hirci quidem instar videtur esse barbatus, quod ei villi nigri sint in gutture et in armis longi; cervi vero gerit speciem; eo tamen multo est crassior et robustior. *Cervinus* etiam ipsi color infidet, sed nonnihil nigrescens, unde nomen Germanicum traxit. Veruntamen suprema dorſi pars cinerea est, ventris subnigra, non ut cervis candida, atque illius villi circa genitalia nigerrimi sunt. Caeteris non differunt uterque in nostris sylvis, quamquam plures *tragelaphi* in his quae finitimae sunt Boëmicis quam in aliis reperiuntur; *Agricola apud Gesnerum Hist. quad. p. 296. et 297.*—Alterum cervi genus ignotius quod Graeco nomine *Tragelaphus* dicitur. Priore (cervi scilicet vulgaris) majus, pinguius, tum pilo densius et colore nigrius; unde Germanis a semiuſti ligni colore, *Brandbirtz* nominatur; hoc in Misenae saltibus Boëmiæ vicinis capitur; *Fabricius apud Gesnerum, p. 297. cum Icone p. 296.*

‡ See vol. III. Art. *Roebuck*,

have palmated horns. The mazame of Mexico, the cuguacu-apara of Brasil, and the cariacou, or wood-hind, of Cayenne, have an entire resemblance to our red roebucks. To be convinced that all these names denote the same animal, we have only to compare the descriptions given under them. But the temamaçame, which, in our opinion, is the cuguacu-été of Brasil, the small cariacou or Savannah hind of Cayenne, may be only a variety different from those of Europe. The temamaçame is smaller, and has also a whiter belly, than the mazame, in the same manner as our brown roebuck is smaller, and has a whiter belly than the red kind. It appears likewise to differ from the mazame in its horns, which are simple, and without antlers, in the figure given by Recchi. But, if it be considered, that, in our roebucks and stags, the horns have no antlers during the first and sometimes the second year of their age, we will be led to believe that Recchi's temamaçame was too young to have antlers. Hence these two animals seem to be only varieties of the roebuck species, which will be still farther apparent from comparing the figures and descriptions of the different authors we have quoted, with the figure here given of a cariacou which was sent us from Cayenne, and which we nourished in Burgundy for several years.

It now remains to investigate the two animals exhibited by Seba under the false appellations
of

of *mazame* and *temamaçame*. The bare inspection of the figures, independent of his description, which we have inserted above in the notes, show that these animals belong to the goats or gazelles, and by no means to the stags or roebucks. The want of a beard, and the figure of the horns, prove that they are not goats, but gazelles; and, by comparing Seba's figures with the gazelles I have described, I discovered, that his pretended *temamaçame* of New Spain is the *Kob*, or *small brown cow of Senegal*. The figure, colour, and size of the horns are the same. The colour of the hair, which differs from other gazelles, by being yellow, instead of white, on the belly and flanks, is also the same. With regard to his pretended *mazame*, though it has a general resemblance to the gazelles, it differs remarkably from all those we have formerly enumerated. But we have found, in the cabinet of M. Adanson, which contains the rarest productions of Senegal, a stuffed animal, which we called *Nagor*, on account of the resemblance of its horns to those of the *nanguer* *. This animal is found

* *Capra a D. Andriot missa. Differt a nanguer. Longitudo ab apice rostri ad anum quatuor fere pedum; ab ano ad pectus duo pedes cum dimidio. Altitudo a pedibus anticis ad dorsum duo pedes et tres pollices; a pedibus posticis duo pedes cum dimidio. Ventris longitudo inter pedes, pedem unum et tres pollices; ventris crassities decem pollices. Caput longum novem pollices; altum sex, latum quatuor cum dimidio. Cornua longa quinque pollices cum dimidio; lata unum pol-*

licem



A. Bell's engr.

MEMINA of CYLON.

3

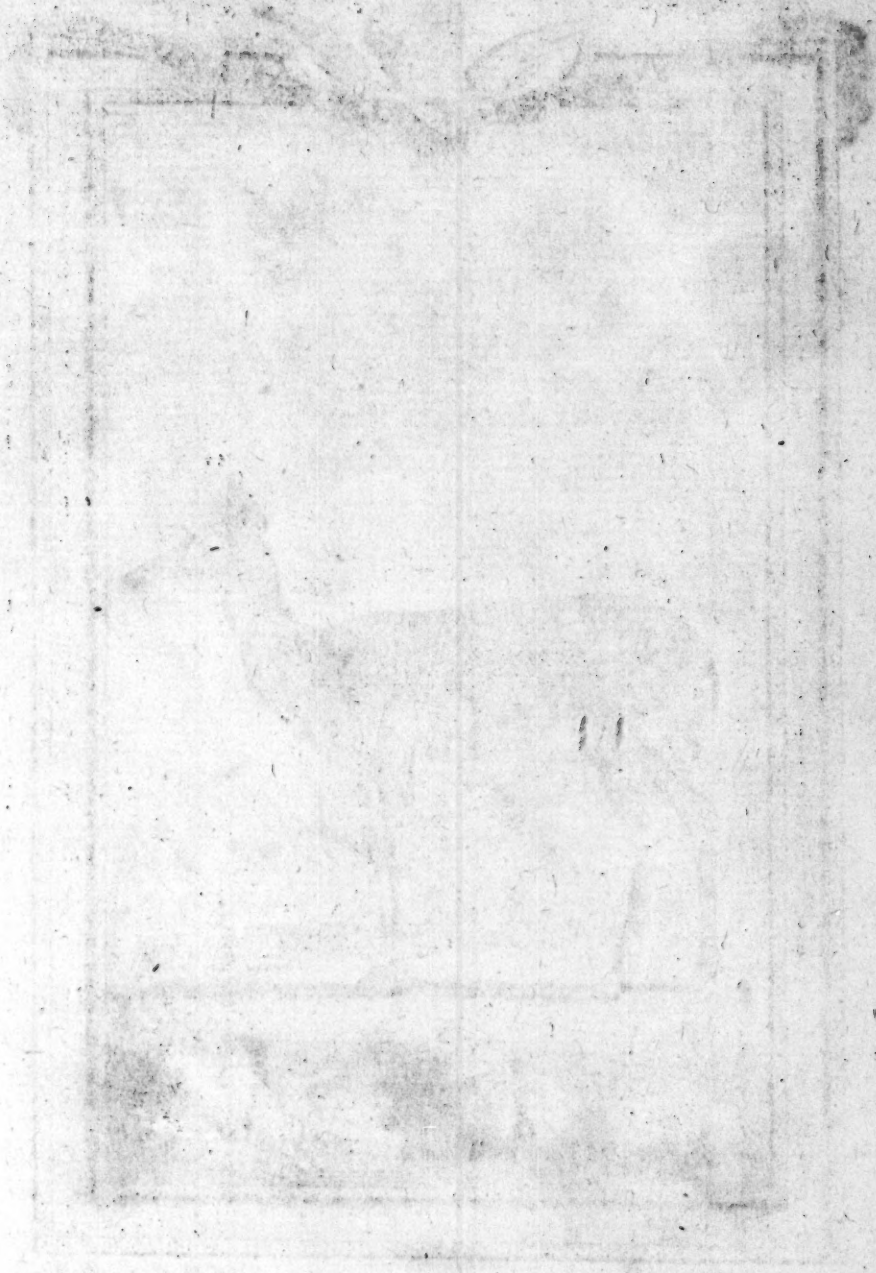


Plate COL



CARIACOU.

A. Bell Sculp.





A Bell's Sculp.

NAGOR.

in the lands adjacent to the island of Goree, from which it was transmitted to M. Adanson, by M. Andriot, and possesses all the characters which Seba has attributed to his pretended *mazame*. The whole body is of a pale red colour; and the belly is not white, as in the other gazelles. It is as large as a roebuck. Its horns, which exceed not six inches in length, are almost smooth, slightly bended, in a forward direction, but not so much as those of the nan-guer. Hence this animal, exhibited by Seba under the name of *mazame*, or *American stag*, is, on the contrary, an *African goat* or *gazelle*, which we add here, under the appellation of *na-gor**, to the twelve gazelles whose history we have formerly given.

The

licem cum dimidio. Apices cornuum distant sex pollicibus; aures longae quinque pollicum; cornua basi 1 ad 2 annulis levibus cincta; color totus rufus. Pili mediocres, rigidi, lucidi, unum pollicem longi, corpori non adpressi. M. S. Note, accompanying the stuffed animal which we borrowed from M. Adanson, in order to make a drawing of it.

* The red antelope, with horns five inches and a half long, and one or two slight rings at the base. The length of this animal is four feet, and the height two feet three inches. The ears are five inches long. The hairs are stiff and bright. All parts of the body are of a reddish colour; *Pennant's synops. of quad. p. 30.*

THE COUDOUS, or INDIAN ANTI- LOPE*.

THE class of ruminating quadrupeds is the most numerous, and the most diversified. It comprehends, as we have seen, a great number of species, and perhaps a still greater number of distinct races, or permanent varieties. Notwithstanding all our researches, and the laborious details into which we have been obliged to enter, we freely acknowledge that the subject is by no means exhausted, and that there still remain animals of considerable note which we know only by imperfect fragments, and are unable to ascertain the creatures to which they belong. For example, in the very large collection of horns preserved in the royal cabinet, as well

* The Indian antelope, with thick straight horns, marked with two prominent spiral ribs near two thirds of their length, and smooth towards their end: Some are above two feet long. Those at the British Museum, with part of the skin adhering, are black. The colour of the hair, on the fragment of the head, is of a reddish brown, bounded on the cheeks by a dusky line beneath, of a pale brown; *Pennant's Synops. of quad. p. 26.*

Antilope oryx; Pallas, Miscel. 9. Spicil. 15.

Nilgaux, or gray oxen; Bernier, vol. 4. p. 47.

Pacasse; Voyage to Congo; Churchill's Collect. vol. 1. p. 623.

as in private museums, each of which, after much labour and investigation, we have referred to the animal to whom it belongs, except one, which, having neither ticket nor any other artificial mark of information, is absolutely unknown. This horn is very large, almost straight, and composed of a thick, black substance. It is not solid, like that of the stag; but it is a hollow horn, filled with a bone or core, like the horns of oxen. A thick rib, raised about an inch, runs from the base to above the middle of the horn. Though the horn be straight, this prominent rib makes a spiral turn and a half in the inferior part, and is entirely effaced in the superior part, which terminates in a point. Upon the whole, this horn seems to have a greater relation to those of the buffalo than to any other. But we are ignorant of the name of the animal; and it was not till lately, that, in searching different cabinets, we found, in that of M. Duplex, a fragment of a head with two similar horns, to which the following ticket was fixed: ‘*Horns of an animal somewhat like a horse, of a grayish colour, with a mane on the fore part of the head like a horse. It is called here (at Pondicherry) Coesdoes, which should be pronounced Coudous.*’ This little discovery gave us great joy. We could not, however, find the name *coesdoes* or *coudous*, in the writings of any voyager. We learned from the ticket alone, that this animal is very large,

and that he is a native of the warmest countries of Asia. The buffalo belongs to the same climate, and has also a mane on the top of his head. His horns, it is true, are crooked and flat, while those under consideration are round and straight, which, as well as the colour, sufficiently distinguishes these two animals; for the skin and the hair of the buffalo are black, and, according to the ticket, the hair of the coudous is grayish. These relations suggested others: The travellers into Asia mention large buffaloes of Bengal, reddish buffaloes, and grayish buffaloes of the Mogul empire *, called *nil-gauts*. The coudous is perhaps one or other of these animals. From the travellers into Africa, where the buffaloes are as common as in Asia, we have more pointed information with regard to a species of buffalo called *pacasse* in Congo, which seems to be the coudous: ‘ Upon the route from Louanda
‘ to the kingdom of Congo, we perceived † two
‘ pacasses, which are animals resembling buffa-
‘ loes, and roar like lions. The male and fe-
‘ male go always in company. They are white,
‘ with red and black spots. Their ears are
‘ half an ell long, and their *horns are entirely*
‘ *straight*. When they see any person, they
‘ neither fly nor do any harm, but stare at the
‘ passengers.’

* In the hunting of the nil-gauts or gray oxen, which, in my opinion, are a species of elk, there is nothing particular, &c.; *Voyage de Bernier, tom. 2. p. 245.*

† Relation de Congo par les P. P. Michel-Ange de Gal-
line & Denys de Charly de Plaisance, Capucins, p. 77.

'passengers.' We formerly remarked, that the animal called *empacassa*, or *pacassa*, in Congo *, appeared to be the buffalo. It is in fact a species of buffalo, differing from him in the figure of the horns and colour of the hair. In a word, the *pacassa* is the coudous, which perhaps constitutes a different species from that of the buffalo, and perhaps is only a variety of it.

The

* The country of Congo produces another animal which the natives call *empacassa*. Some people think it is the buffalo, and others that it has only a great resemblance to that animal. The editor of Lopes's Account tells us, that it is not so large as a buffalo, but that it resembles him in the head and neck.——Dapper assures us, that the buffalo is called *empacassa* in the kingdom of Congo, and that its hair is red, and its horns black; *Hist. gen. des voyages*, tom. 5. p. 81.

The M U S K*.

TO finish the history of the goats, gazelles, chevrotains, and other animals, of this kind, which are all natives of the Old Continent,

* The Tibet musk is of the form of a roebuck: Length three feet three inches; from the top of the shoulders to the soles of the feet, two feet three inches. The upper jaw is much longer than the lower, on each side of which there is a slender tusk, near two inches long, hanging out quite exposed to view. In the lower jaw are eight small cutting teeth, none in the upper, and in each jaw six grinders. The ears are long and narrow, the inside of a pale yellow, the outside deep brown. The chin is yellow. The hair on the whole body is erect, very long, and each marked with short waves from top to bottom. The colour near the lower part is cinereous, black near the end, and ferruginous at the tips. The hoofs are slender and black; and the spurious hoofs of the fore-feet are very long. The tail is an inch long, hid in the hair. The scrotum is of a bright red colour; but the penis is so hid as scarce to be discovered. The female is less than the male, and her nose sharper. She wants the two tusks, and has two small teats. The noted drug the musk is found in a bag or tumour, of the size of a hen's egg, on the belly of the male only; *Pennant's synopsis of quadr. p. 56.*

Capreolus moschi; *Gesner. quadr. p. 695.*

Capra moschi; *Aldrovand. de quadr. bisulc. p. 744.*

Hiam, animal musci; *Michael. Boym, Flora Sinensis, p. 2.*

Animal moschiferum; *Raii syn. quadr. p. 127. Schrokius, Hist. moschi, p. 1. tab. 1.*

Animal moschiferum, Kabarga; *Nouv. Com. Petrop. tom. 4,*

ment, it now only remains to give that of the musk, an animal as famous as it is little known. It has been mentioned by all our modern naturalists, and by most travellers into Asia. Some of them have considered it as a *stag*, a *roe buck*, or a *musk goat*, and others as a large *chevrotain*. It seems indeed to be an ambiguous animal, participating of the nature of all these species. We may be assured, however, that its species is distinct, and different from all the other quadrupeds. It is of the size of a small roe buck; but has no horns. By this character, it resembles the *memina* or Indian musk. It has two large tusks in the upper jaw, by which it approaches to the Guiney musk. But, what distinguishes the musk from all other animals, is a kind of bag near its navel, about two or three inches in diameter, in which the liquor, or rather fat humour called *musk*, is separated, and which differs both in odour and consistence from that of the civet. Neither the Greeks nor Romans mention this animal. It was first taken notice of by the Arabians*. Gesner, Aldrovandus,

Musk animal; *Tavernier's trav.* vol. 2. p. 153. *Le Brun's trav.* vol. 1. p. 116. *Bell's trav.* vol. 1. p. 88. *Strahlenberg*, p. 339. *D. Hald, China*, tom. 1. p. 63. 324. *Grew's Museum*, p. 21.

Tragus moschiferus, *Moschus*; *Klein. quad.* p. 18.

Tragus ad umbilicum folliculum moschiferum gerens; *Briffon. quad.* p. 97.

Moschus moschiferus, folliculo umbilicali; *Linn. Syst. Nat.* p. 91.

* Abusseid Serafi remarks, that the musk animal resembles the roe buck in the skin and colour, in the slenderness of the legs,

vandus, Kircher *, and Boym have treated pretty fully of this animal ; but Grew † is the only author who has given an exact description of it from a stuffed skin, which, in his time, was preserved in the cabinet of the royal society of London.

This

legs, in the hoofs, in the *erect and somewhat bended horns* ; and that it is armed with two white tusks on the side of each cheek. This author is single in asserting that the musk animal has horns ; he has perhaps conjectured from analogy, that, as it resembled the roebuck in other respects, it ought likewise to have horns. We have taken notice of this error, because it is copied by Aldrovandus. Avicenna, when speaking of the *musk*, says, that it is the purse or follicle of an animal pretty similar to the roebuck, only it has two large crooked tusks. There is a figure of this animal in the fragment of Cosmas, printed in the first volume of Tavernier's travels.

* I say, in the first place, that there is a certain stag in the provinces of Xensi and Chiamfi, which has a fine odour, and is called by the Chinese *Xerchiam*, that is, the *musk animal*. The Chinese Atlas mentions it in the following terms : “ To keep you no longer in suspense concerning the signification of the word *muschus*, I can assure you that I have seen the animal oftener than once. It has a protuberance near the navel which resembles a small purse, because it is surrounded with a very delicate skin, and covered with soft hair. The Chinese call this animal *Xe*, which signifies *odour*, and the compound word *Xehiang* denotes the odour of the animal *Xe*, or *Se*, *muschus*.” It is four feet long, and as swift as a stag. The only difference is, that its hair is blacker, and it has no horns. The Chinese eat its flesh, which is very delicate. The provinces of Suchuen and Junnan abound with these animals, and they are most numerous in the western provinces of China ; *La Chine illustrée de Kircher*, p. 256.

† The musk deer breeds in China and the East Indies. Not ill pictured in Calceolarius's museum. That in Kircher's *China illustrata* faulty as to the snout and feet. That of Johnston

This description I have copied in the note. The year
ston absurd. Almost every where worse described. That
he is a two-horned animal, says Aldrovandus, all agree, ex-
cept Simeon Sethi, who saith he hath but one. Neither of
which is true. The description likewise given by Scaliger,
and out of him by Chiocco in Calceolarius's museum, is false,
and very defective. The best I find is amongst the German
Transactions; to which I would have referred the reader,
but that, comparing it with that I had drawn up before I
met with it, I see some differences.

From his nose and to his tail, a yard and half a foot long.
His head above half a foot. His neck one fourth of a yard.
His fore-head three inches broad. His nose-end scarce three
fourths of an inch, being very sharp, like that of a gray-
hound. His ears like a coney's, about three inches long, and
erect. As also his tail or scut, which exceeds not two inches.
His fore-legs a foot and two inches long, taking in foot and
thigh. Near an inch over; the foot deeply cloven; with two
fore hoofs, an inch and a quarter long, each a quarter of an
inch over; and two heels almost as big, and therefore con-
spicuous. His hinder-feet are here wanting.

His hair on his head and legs about half an inch long, and
rateably small. On his belly, an inch and a half long, and
somewhat thicker. On his back and buttocks three inches
long, thicker in proportion than any other animal, except,
perhaps, some of the deer-kind, *sc.* three or four times as
thick as hogs bristles; consisting of brown and white portions
alternately from the root to the top. On the head and legs
brown. On the belly and under the scut, whitish. As it
were frizled, especially on the back and belly, by a kind of
undulation. Softer than in most animals, and exceeding light
and rare. For, being split, and covered with a gloss, they
appear to be made up of little bladders, like those in the plume
or stalk of a quill; so that it is a thing betwixt a common hair
and a quill. On each side his lower chop, almost under the
corner of his mouth, there is a peculiar tuft, (about three
fourths of an inch long,) of short, thick, and hard hairs, or
rather bristles, of equal length, as in a scrubbing brush.

The

year after the publication of Grew's work, in 1681, Luc Schrockius * printed, at Vienna, the history of this animal, which contains nothing remarkable either for correctness or novelty. I shall, however, combine the facts which can be gathered from it with those of other authors, and particularly the more modern travellers. Having never been able to procure the animal itself,

The musk bladder or bag is about three inches long, two over, and swelling out from his belly one and a half. Standing before his groin about as much. I find it cut open, whereby the observation of its natural aperture (which I suppose it hath as the castor bag) is prevented.

He hath twenty-six teeth. In his lower chop, sixteen; of which there are eight little cutters before; behind four grinders on each side, rugged and continuous. As many like grinders in the upper jaw. About an inch and a half from the nose-end, in the same jaw, on each side a tusk, two inches and a half long, hooked downward, and backward, and ending in a point. Not round, but flat, the breadth of half an inch; thin, and having a sharp edge behind; so as it may not unfitly be likened to a fithe. There are no horns; *Grew's Museum*, p. 21.

* Schrockius gives a figure, but no description of this animal. He only remarks, that it resembles a roebuck, with the exception of having two prominent tusks in the upper jaw, about three inches long, and directed downward; that this is the chief characteristic of the animal; that it varies in the colour of its hair; that its head likewise differs from the roebuck, and approaches to that of the wolf; that the hair is generally marked with several spots; and that the protuberance which contains the *musk* is situated a little below the navel. He adds, that this animal is found in Tartary, in Tibet, in China, and particularly in the province of Xinsi, in Tonquin, in Pegu, in the kingdom of Aracan, and in Bouthan; p. 32.—57.

itself, we are reduced to the necessity of collecting and digesting what has been said of it by others. From Grew's description, which is the only authentic work we are possessed of, it appears that this animal has long coarse hair, a sharp muzzle, and tusks like those of a hog; and that, by these characters, it approaches the wild boar, or rather the *babiroussa*, called the *wild Indian boar* by the naturalists, which, along with several characters of the hog, is, like the musk animal, smaller, and has taller and more nimble limbs, resembling those of the stag or roebuck. On the other hand, the American hog, which we have called *pecari*, has on his back a cavity or purse which contains an odoriferous humour; and the musk animal has a similar purse, not on his back, but under his belly. In general, none of those animals which produce odorous liquors, as the badger, the beaver, the *pecari*, the musk rats, and the civet, belong to the genus of deer or goats. Hence we would be led to think, that the musk animal makes a nearer approach to the hog-kind *, of which he has the tusks, if, at the same time, he had cutting teeth in the upper jaw. But, his want of these teeth connects him with the ruminating animals, and

VOL. VII.

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particularly

* Animal moschiferum neque e cervino neque e caprino genere esse videtur; cornua enim non habet, et an ruminet incertum est; dentibus tamen incisoriis in superiore mandibula caret ruminantium in modum, et dentes ibidem exertos habet, (*Tusks* Anglice, *defenses* Gallice,) velut porcus; *Raii Syn. quad. p. 127.*

particularly with the chevrotain, which chews the cud, though it has no horns. All these external characters, however, furnish us with conjectures only. But an examination of the internal parts can alone decide concerning the nature of this animal, which to this day is very little known. I have made it follow the goats and antilopes, not because it seems to have any connection with these species, but lest I should too much offend the prejudices of most naturalists.

Marco Paolo, Barbosa, and P. Philippe de Marini, are all more or less deceived in the notices they have given concerning this animal *. The only

* Paolo describes it in this manner. Its hair is coarse, like that of the stag: It has the feet and tail of a gazelle, and no horns *any more than that animal*. It has *four* teeth in the upper jaw, about three inches long, which are as delicate and white as ivory; two of them rise upward, and two turn downward, and the creature is exceedingly beautiful. During *the full moon*, it is affected with an imposthume on the belly near the navel; and at this time the hunters seize the animal, and open this imposthume. Barbosa says, that it is very like the gazelle; but he agrees not with other authors, when he tells us that its hair is white. The following are his words: "The *musk* is found in small white animals which resemble gazelles, and have tusks like elephants, though much smaller. A kind of imposthume forms under the belly and breast of these animals, and, when the matter is ripe, the tumour grows so itchy, that they rub it against the trees: The matter which falls down in small grains is the most perfect *musk*." Thevenot's description seems to correspond still better with the others. "In these countries," says he, "there is an animal with a muzzle similar to that of the fox, but whose

only fact in which they agree is, that the *musk* is formed in a pouch or tumour near the navel; and it appears from their testimonies, as well as those of other travellers, that the male alone produces the *musk*; that the female has the same pouch near the navel, but that the humour secreted in it has not the same odour; that this tumour of the male is not filled with *musk*, except in the rutting season; and that, at other times, the

whose body exceeds not the size of a hare. His hair resembles that of the stag, and he has the teeth of a dog: He produces excellent musk in a bladder under the belly, which is full of corrupted blood; and this blood composes, or rather is the musk itself. The natives cut away this bladder, and cover the cut part of it with leather, to prevent the dissipation of the odour. But, after this operation, the animal soon dies." The description given by Pigafetta, who says that the musk is of the size of a cat, corresponds not with that of other authors; neither does that of P. Philippe, who makes the head of the musk resemble the head of a wolf: And P. Kircher, in the figure he has given of this animal, represents it with the snout of a hog, which is perhaps an error of the engraver, who has likewise given it claws instead of cloven hoofs. Simeon Sethi recedes still farther from truth, when he makes the musk as large as an unicorn, and even a species of it. "The *musk* of least value," says he, "is brought from China and the East Indies, and is of a blackish colour. The *musk* is formed below the navel of a large animal with one horn, and which has a resemblance to the roebuck. In the rutting season, a mass of clotted blood collects round his navel, and produces a swelling, the pain of which prevents him from eating or drinking: He then rolls himself on the earth, breaks the tumour, and discharges the blood, which, after coagulating, acquires a fine odour." All these authors agree in the manner in which the *musk* is formed in a bladder or tumour near the navel, when the animal ruts; *Anciennes relations des Indes & de la Chine*, p. 216,

the quantity of this humour is smaller, and its odour weaker.

With regard to the *musk* itself, its essence is perhaps as little known as the nature of the animal from which it is procured. All travellers agree, that this drug is perpetually adulterated with blood, or other drugs, by the venders. The Chinese not only augment its size by mixture, but they endeavour to increase its weight by incorporating finely powdered lead with it. The *musk* which is purest, and in most request among the Chinese themselves, is that which drops spontaneously from the animal upon stones or trunks of trees, against which it rubs, when the matter is too abundant, or begins to irritate the pouch where it is formed: That found in the pouch itself is seldom so good; because it is not fully ripe, or rather because it is during the rutting season only it acquires its greatest strength and odour; and, at this period, the animal endeavours to get rid of a matter which is too highly exalted, and occasions itching and some degree of pain. Both Chardin * and Tavernier

* It is well known, that *musk* is the excrementitious matter of an animal which resembles the wild goat, except that its body and limbs are more delicate. It is found in High Tartary, in the north of China, and in Tibet, which is a kingdom between India and China. I never saw these animals alive, but I have seen their skins in many places. There are figures of them in the Dutch ambassador's lodgings at China, and in the *China illustrata* of Kircher. It is commonly said, that

vernier have well described the methods practised by the Orientals to adulterate *musk*. The merchants

that the *musk* is the sweat of the animal, which runs down and is collected in a thin bladder near the navel. But the natives of the East tell us with more precision, that it is formed in an abscess within the body, and near the navel of this goat, the humour of which produces an itching and prickling pain, especially when the animal is in season; that, by rubbing against trees or rocks, the abscess bursts, and the matter is diffused between the muscles and the skin, where it collects and forms a kind of blister or bladder; and that the internal heat exalts this corrupted blood, and gives it the strong odour of *musk*. This bladder is called *the navel of the musk*, or *the odori-ferous navel*. The Eastern people prefer the Tibet *musk* to that of China, whether it is really a stronger odour, or only appears so, because it arrives to them fresher, Tibet being nearer to them than the province of Xinsi, which produces more *musk* than any other district of China. The great *musk* trade is carried on at Boutan, a celebrated town in the kingdom of Tibet. The Patans go there to purchase it; and they distribute it over all India, from whence it is transported through the whole earth. The Patans border on Persia and High Tartary, and are subject or rather tributary to the Great Mogul. The Indians make great use of this aromatic drug. They employ it in their perfumes, confections, and every composition they have been accustomed to prepare for the purposes of provoking love, or of restoring lost vigour. The women use it to dissipate the vapours which ascend from the uterus to the brain; by fixing a bladder of it on their navel; and, when the vapours are violent and perpetual, they take the *musk* out of the bladder, tie it in a small linen bag, and apply it to a place which modesty permits not to be named.——It is commonly alledged, that, when the musk-bag is cut open, so strong an odour bursts out, that the hunter is obliged to have his mouth and nose covered with several folds of linen; and that, notwithstanding this precaution, the force of the odour is often so great as to produce a mortal

merchants must necessarily augment the quantity of it beyond conception; for, in one year, Tavernier * purchased 1663 bags, which supposes an

tal haemorrhagy. I made a particular inquiry into this fact, and, having heard similar accounts from some Armenians who had been at Boutan, I am inclined to think it is true; because this drug, instead of acquiring, loses its odour in process of time. Now this odour is so strong in India, that I was unable to bear it. When I dealt in *musk*, I stood always in the open air, with a handkerchief on my face, and at a distance from those who handled the bladders, and brought them to my broker. I then perceived that *musk*, when fresh, is extremely heady, and quite insupportable. I shall only add, that there is no drug so easily or so frequently adulterated. Some bags are only pieces of the animal's skin, filled with its blood, and a small quantity of *musk* to give it an odour, instead of that bladder formed by the wisdom of Nature near the navel to receive this wonderful and odoriferous humour. With regard to the genuine bladders, when the hunters find that they are not full, they squeeze the animal's belly, and fill them with blood; for they believe that the blood of the musk, and even its flesh, has a fine scent. The merchants afterwards mix the *musk* with lead, ox's blood, and other substances proper for augmenting its weight. The Eastern people employ several modes of detecting this falsification, without opening the bag: They learn from experience to distinguish the proper weight of an unadulterated bag. They likewise know by the taste. Hence the Indians never purchase *musk* without tasting small grains of it, which they squeeze out of the bags. In fine, they take a thread steeped in garlick juice, and draw it through the bag with a needle: If the odour of the garlick be extinguished, the *musk* is good, and if the thread preserves the scent of the garlick, the *musk* is adulterated; *Voyage de Chardin, tom. 2. p. 16.*

* The best, and the greatest quantities of *musk* come from the kingdom of *Boutan*, from which it is carried for sale to Patna, the chief town of Bengal. All the *musk* sold in Persia

an equal number of animals. But, as this animal is no where domestic, and the species confined to a few provinces of the East, it cannot possibly

is transported from thence. I had the curiosity to carry a skin of this animal to Paris, and have given a figure of it.

After killing the animal, the peasants cut off the bag, which is of the size of an egg, and is situated nearer the organs of generation than the navel. They next take out the *musk*, which then has the appearance of clotted blood. When they want to adulterate it, they put a mash of the animal's liver and blood in the place of the musk they had extracted. In two or three years, this mixture produces certain small animals which eat the good *musk*; so that, when opened, a great defalcation is discovered. Others, after extracting a portion of the musk, put in small pieces of lead, to augment the weight. The merchants who transport *musk* to foreign countries love this trick better than the other, because none of these small animals are produced by it. But the deceit is still worse to discover, when, of the skin taken from the belly of a young animal they make little bags, which they sew so dexterously with threads of the same skin, that they resemble genuine bags. These they fill with what they take out of the genuine bags, and some fraudulent mixture, which it is extremely difficult for the merchants to detect. When the bags are sewed immediately upon their being cut, without allowing any part of the odour to dissipate in the air, after they have abstracted as much of the *musk* as they think proper, if a person applies one of these bags to his nose, blood will be drawn by the mere force of the odour, which must necessarily be weakened or diluted, in order to render it agreeable, without injuring the brain. The odour of the animal I brought to Paris was so strong, that it was impossible to keep it in my chamber. It made every head in the house giddy; and I was obliged to put it in a barn, where my servants at last cut away the bag: The skin, notwithstanding, always retained a portion of the odour. These animals are not found in a lower latitude than the fifty sixth degree. But
in

possibly be so numerous as to produce such a quantity of this matter. Most of these pretended bags, therefore, must be little artificial bladders made of the skin of other parts of the animal's body, and filled with blood and small portions of

in the sixtieth they are very numerous, the country being full of woods. In the months of February and March, it is true, after suffering much hunger in their favourite clime, on account of the snow, which is sometimes ten or twelve feet deep, they come southward as far as the forty-fourth or forty-fifth degree, in order to procure grain, or fresh rice. During this period, the peasants lie in wait for these animals with snares, and kill them with arrows and bludgeons. Some of them, I was assured, are so meagre and languishing with the hunger they suffer, that they are easily taken. These animals must be extremely numerous; for each of them has but one bag, and the largest bag, which seldom exceeds the size of a hen's egg, cannot furnish above half an ounce of *musk*. Three or four of them are sometimes necessary to afford a single ounce.

The King of Dantan, apprehensive that the practice of adulterating the *musk* would injure the commerce of his kingdom, especially as it is also produced, though dearer and in less quality, in Tonquin and Cochinchina, ordered, some time ago, that none of the bags should be sewed, but that the whole of them should be brought open to Boutan, the place of his residence, to be examined and sealed with his own seal. All those I purchased were of this kind. But, notwithstanding all the precautions of the King, the peasants open the bags in a crafty manner, and put into them small pieces of lead, which the merchants tolerate, because lead, as formerly remarked, does not spoil the *musk*, but only augments the weight. In one of my voyages to Patna, I purchased 1663 bags, which weighed 2557 ounces and a half; and the *musk*, when taken out of the bags, weighed 452 ounces; *Les six voyages de Jean-Baptiste Tavernier en Turquie, en Perse, & aux Indes, tom. 4. p. 75.*

have lost no part of its activity.

The BABIROUSSA, or INDIAN HOG*.

THOUGH we have only the head of this animal in the Royal Cabinet, it is too remarkable to be passed over in silence. All naturalists have regarded it as a species of hog; and yet it has neither the head, the stature, the bristles, nor the tail of a hog. Its legs are longer, and its muzzle shorter. It is covered with short hair, as soft as wool, and its tail terminates in

* The Indian hog has four cutting teeth in the upper, six in the lower, and ten grinders in each jaw. In the lower jaw, there are two tusks pointing towards the eyes, and standing near eight inches out of their sockets. From two sockets on the outside of the upper jaw, there are two other tusks, twelve inches long, bending like horns, their ends almost touching the forehead. The ears are small, erect, and sharp pointed. Along the back are some small bristles. On the rest of the body only a sort of wool, such as is on lambs. The tail is long, ends in a tuft, and is often twisted. The body is plump and square, not of that elegant form which Bontius and Nieuhoff give it, as appears from an original drawing Mr Loten favoured me with; *Pennant's Synops. of quad. p. 74.* Ape in India, &c.; *Plin. lib. 8. c. 52.*

Babyroussa; *Bontius, Inaia, p. 61. Grew's Musaeum, p. 27. Raii synops. quad. p. 26. Klein. quad. p. 25. Seba Mus. tom. 1. p. 80. tab. 50. Valentin, Amboin. tom. 3. p. 268.*

Strange hog; *Purchas's Pilgrim, vol. 2. p. 566. Nieuhoff's voy. p. 195.*

in a tuft. Its body, likewise, is neither so heavy nor so thick as that of the hog. Its hair is gray, mixed with red and a little black. Its ears are short and pointed. But the most remarkable character, which distinguishes the babiroussa from all other animals, consists in four large tusks or canine teeth, the two shortest of which proceed, like those of the wild boar, from the under jaw, and the two longest, by piercing the cheeks, or rather the lips, from the upper jaw, and extend in a curve above the eyes. These tusks are a beautiful ivory, which is cleaner and finer, but not so hard as that of the elephant.

The direction of the two superior tusks, which first rise high and then bend in the form of a circle, induced some able natural philosophers, such as Grew *, to think, that these tusks ought not to be regarded as teeth, but as horns. They founded their opinion upon this circumstance, that,

Sus babyrussa, dentibus duobus caninis fronti innatis; Linn. Syst. Nat. p. 104.

Sus caudatus, dentibus caninis superioribus, ab origine sursum versis, arcuatis, cauda floccosa; Aper Orientalis. Le Sanglier des Indes; Brisson. quad. p. 76.

Babiroussa seu porcus Indicus. Iconem animalis in insula Java Novae Bataviae, Januar. 1650, depictam, et cranii quod Hafniae vidi, naturae studiosorum in gratiam addendam exhibuimus; *Th. Bartholini hist. anat. cent. 11. hist. 96. fig. ibid.*

* On his upper jaw, he has two horns. — *Bartholine* calls them teeth, yet are they not teeth, but *horns*; because they are not, as all teeth, even the tusks of an elephant, fixed in the jaw, with their roots upward, but downward: And so their *alveoli* are not open downward within the mouth, but upward upon the top of the snout, &c.; *Grew's Mus. Reg. soc. p. 28.*

that, in all animals, the sockets of the teeth in the upper jaw open downward; that, in the babiroussa, all the sockets likewise open downward, except those of the two great tusks, which open upward; and hence they conclude, that, from this essential character of the upper teeth, these tusks, whose sockets open upward, cannot be regarded as teeth, but as horns. These philosophers, however, were deceived. Position or direction are circumstances by no means essential to the existence of an object. These tusks, though situated in a manner opposite to that of other teeth, are still teeth; the singularity of their direction cannot alter their nature, or convert a true canine tooth into an ivory horn.

These enormous quadruple tusks give this animal a formidable appearance; yet he is less dangerous, perhaps, than our wild boar. They go in herds, and have a strong odour, which betrays them to the dogs, who often hunt them with success. They growl in a frightful manner*, and fight and defend themselves with their under tusks, the upper ones being rather incommodious than serviceable to them. Though brutal and ferocious, they are easily tamed; and their flesh, which is very good, corrupts in a short time. As their hair is fine and their skin thin, they make little resistance against the teeth

of

* Mus. Worm. p. 340. Pison. Apend. in Bont. p. 61.

of the dogs, who hunt them in preference to the boar, and accomplish their purpose with ease. In order to rest their head, or to sleep in a standing posture, they hook their upper tusks to the branches of trees*. This practice is common to them and the elephant, which, to repose without lying down, supports its head by putting the ends of its tusks into holes that it digs for this purpose in the wall of its apartment†.

The babiroussa differs likewise from the wild boar in natural appetites. He feeds upon herbs and the leaves of trees, and never enters the gardens to devour pot-herbs: But the boar, even in the same country, lives upon wild fruits and roots, and often lays waste the gardens. Besides, these animals, which go equally in herds, never intermix; the wild boars keep to one side, and the babiroussas to the other. The latter walk lightly, have a very fine scent, and often rise erect against the trees, in order to smell at a distance the approach of dogs or hunters. When hard pursued, they run into the sea, where, by swimming with as much facility as ducks, and even diving, they often escape the hunters; for they swim a long time, and sometimes to great distances from one island to another.

The babiroussa is found not only in the island of Bouro or Boero, near Amboina, but in several

* Descript. des Indes Orient. par Franc. Valentin, tom. 3. p. 268.

† See above, art. *Elephant*.

ral other parts of the south of Asia * and Africa, as in Celebes, Estrila †, Senegal ‡, and Madagascar ; for it appears that the wild boars of this island mentioned by Flacourt ||, *the males of which, he remarks, have chiefly two horns on the side of the nose*, are babirouffas. We have not been able to determine, whether the females be deprived of these two tusks, which are so remarkable in the male.

S U P P L E M E N T.

We are now enabled to give a figure of the babirouffa from two drawings, one of which was

* The babirouffas are numerous in the islands of Boero, Cajely, Xoelafche, Xoela, Mangoli, Bangay on the west coast of Celebes, and in Manado ; *Descript. des Indes Orientales par Francois Valentin, tom. 3. p. 369.* Most of the facts we have related, regarding the history of the babirouffa, are taken from Valentin's work.

† Among other articles of merchandise the Dutch bring from the coast of Estrila, are wild boars tusks, which are more beautiful than those of the elephant ; *Lade's Voyage, tom. 1.*

‡ I at last perceived one of these enormous wild boars, which are peculiar to Africa.—It was black, like those of Europe, but in stature it was vastly taller. It had four large tusks, the two superior of which bended in a circular form toward the front, and had the appearance of horns ; *Voyage au Senegal, par M. Adanson, p. 76.*

‡ Voyage á Madagascar, par Flacourt, p. 152.

Plate CCIII.



A. Belli sculp.

BABIROUSSA.

STATE OF NEW YORK

IN SENATE

JANUARY 1, 1881

REPORT OF THE

COMMISSIONER OF THE LAND OFFICE

IN RESPONSE TO A RESOLUTION

PASSED BY THE SENATE

APRIL 1, 1880

ALBANY:

WILLIAM H. SAWYER, PRINTER.

1881.

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was transmitted to us by M. Sonnerat, where the animal is represented in a standing posture, and the other, which is lying on its belly, was sent to us from England by Mr Pennant. This last drawing was accompanied with the following inscription : ' A babiroussa from the island of Banda, drawn after nature. Its colour is blackish. It grows to the size of the largest hog ; and its flesh is very good eating.' Our figure is a combination of both drawings, and, though it cannot be perfectly exact, it exhibits a pretty just idea of the animal.

The

The thick-skinned pig has the fore hoofs divided into four, and the hind hoofs into three, a very large and thick head and nose, small rounded ears, and large black eyes. The upper jaw is longer than the lower. There are two large and great cutting teeth in each jaw; eight grinders in each jaw, and each of these grinders form on their surface seemingly three teeth, each set at their ends. The legs are short, and the toes long, connected near their bottoms by a small web; their ends are guarded by a small hoof. It has no tail. The hair on the body is short, rough, and brown. On the nose, there are long and hard whiskers. It grows to the size of a hog of two years old; Pennant's figure of which

is given in the second volume of the *Asiatic Researches*, p. 230. Pennant's figure of which is given in the second volume of the *Asiatic Researches*, p. 230. River hog; Water in Dantier, vol. 2, p. 400. Cochon d'eau; Du Mont, tom. 2, p. 112. *Sus maximus palustris*; Cuvier, *capitulum*; *ferret*, *ferret*. *Epinus*, p. 100. *Copied*; *ferret*, *ferret*, p. 99. *Sus hydrochus*, *plum*, *trachylis*, *crudo*, *nalis*; *ferret*, *ferret*, p. 103.

The **CABIAI**, or **THICK-NOSED TAPIR**.*

THIS animal was never seen in Europe, till the Duke de Bouillon had a young one transmitted to him from America. As this Prince is exceedingly curious with regard to foreign animals, he has sometimes done me the honour of inviting me to examine them, and has even been kind enough to present me with several

* The thick-nosed tapir has the fore hoofs divided into four, and the hind hoofs into three, a very large and thick head and nose, small rounded ears, and large black eyes. The upper jaw is longer than the lower. There are two strong and great cutting teeth in each jaw; eight grinders in each jaw, and each of these grinders form on their surface seemingly three teeth, each flat at their ends. The legs are short, and the toes long, connected near their bottoms by a small web; their ends are guarded by a small hoof. It has no tail. The hair on the body is short, rough, and brown. On the nose, there are long and hard whiskers. It grows to the size of a hog of two years old; *Pennant's synopsis of quadrupeds*. p. 83.

Caby-bara; *Marcgrav. Brasil*, p. 230. *Piso, Brasil*, p. 99. *Raii synopsis quadrupedum*, p. 126.

River hog; *Waser in Dampier*, vol. 3. p. 400.

Cochon d'eau; *Des Marchais*, tom. 3. p. 315.

Sus maximus palustris. Cabiai, cabionara; *Barrere, France Equine*. p. 160.

Capivard; *Froger's voyage*, p. 99.

Sus hydrochaerus, plantis tridactylis, cauda nulla; *Linn. Systema Naturae*. p. 103.

veral species. The animal under consideration was killed by the coldness of the climate before it had acquired its full growth. It is not a hog, as is been alledged by naturalists and travellers; for it has only some slight relations to the hog, and differs from him in some remarkable characters. The cabiai never exceeds the size of a hog of eighteen months old. Its head is shorter, and its mouth less. Its feet are also very different from those of the hog; for its toes are connected by membranes. It has larger eyes and shorter ears. In dispositions and manners, it differs not less from the hog, than in the structure of its parts. It lives much in the water, where it swims like an otter, catches fishes with its mouth and feet, and eats them on the banks. It likewise eats grain, fruits, and sugar canes. As its feet are long and broad, it often sits on the hind ones. Instead of the grunting of a hog, its cry rather resembles the braying of an ass. It seldom walks but in the night, and then generally in company, without removing far from the margin of the water. As it runs badly, on account of the length of its feet, and the shortness of its legs, its safety consists not in flight. To escape the hunters, it plunges into the water, swims to a great distance, and remains so long concealed that they lose all hopes of getting another view of it. The flesh of it is fat and tender; but, like that of the otter, it has rather the taste of bad fish than of good flesh. It

66 OR THICK-NOSED TAPIR.

has been remarked, however, that its head is pretty good, which corresponds with what is said of the beaver, that the flesh of its anterior parts is well tasted, while that of the posterior parts has the taste of fish. The cabiai is of a gentle and peaceable disposition; it neither quarrels, nor does mischief to other animals. It is easily tamed, obeys the voice, and follows spontaneously those with whom it is acquainted, and who treat it kindly. At Paris, it was fed with barley, salads, and fruits, and continued in good condition during the warm season. From the great number of pups, it appears, that the female is very prolific. We are ignorant of the times of gestation and growth, and consequently of the duration of its life. Our colonists at Cayenne might inform us with regard to these articles; for this animal is pretty common in Guiana, as well as in Brasil, the country of the Amazons, and other low lands of South America.

S U P P L E M E N T.

We have little to add to the history and description of this American animal. M. de la Borde writes us, that it is very common in Guiana, and still more so in the neighbourhood
of

of the Amazon river, where the fishes are very numerous. He remarks, that these animals go always in pairs, a male and a female; and that the largest of them weigh about a hundred pounds. They fly from the abodes of men, never leave the banks of rivers, and, when they perceive any person, they take to the water, without diving like the otters, but swimming like the hogs. Sometimes, however, they go to the bottom, and continue there a considerable time. They are often taken when young, and brought up in the houses, where they easily accustom themselves to eat bread, millet, and pot-herbs, though, in a state of nature, they live chiefly on fish. The females bring forth only one young at a time. They are by no means dangerous; for they never attack either men or dogs. Their flesh is white, tender, and well tasted. This last fact seems to contradict what is said by other travellers, that the flesh of the cabiai has rather the taste of bad fish, than of good meat. However, the flesh of the cabiai, when it lives on fish, may have this bad taste, and, when fed with bread or grain, it may be very good.

As we had this animal alive in Paris, and kept it a long time, I am persuaded that it might be propagated in our climate. I mentioned above, p. 65. that it was killed by the cold. But I have since been informed, that it

endu-

68 OR THICK-NOSED TAPIR.

endured the winter's cold very well ; but, as it was shut up in a garret, it threw itself down from the window, and fell into a vessel full of water, where it was drowned ; which would not have happened, if it had not been hurt in the fall upon the edge of the vessel.

THE

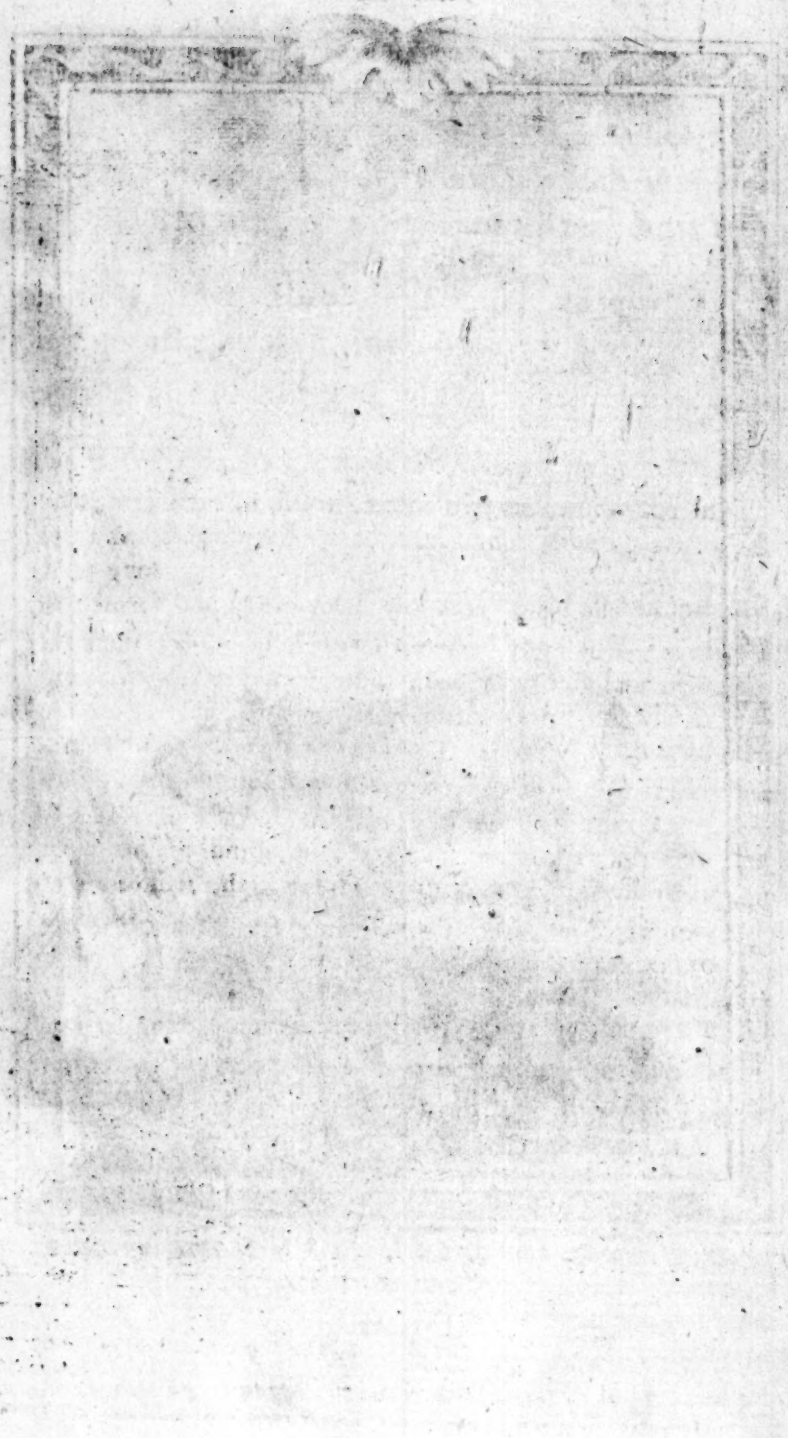
Plate CCIV.



A. Bell Sculp.

CABIAL.

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THE PORCUPINE*.

THE name given to this animal in most European languages leads to the notion that it is a hog covered with bristles, though it has no resemblance to the hog but in the grunting

* The porcupine has two cutting teeth in each jaw; the body is covered with long, hard, and sharp quills, and the upper lip is divided. The crested porcupine has a long crest on the top of the head, reclining backward, and formed of stiff bristles. The body is covered with long quills; those on the hind part of the body being nine inches in length, very sharp at the ends, and varied with black and white. Between the quills are a few hairs. The head, belly, and legs are covered with strong bristles, terminated with soft hair of a dusky colour. The whiskers are long, and the ears are like the human. It has four toes before, and five behind. The tail is short, and covered with quills. The length, from nose to tail, is two feet. and that of the tail four inches; *Pennant's synops. of quad. p. 262.*

In Greek and Latin, *Hystrix*; in Arabic, *Tzur-ban*, according to Dr Shaw; in German, *Stachelschwein*; in Italian, *Porco-spinoso*; in Spanish, *Puerco-espino*; in French, *Porc-epic*.

Hystrix; *Plin. lib. 8. c. 35. Gefner. quad. p. 563. Raii synops. quad. p. 206.*

Porc-epic; *Mem. pour servir à l'hist. des animaux, part. 2. p. 33. tab. 41.*

Hystrix orientalis cristata; *Seba, tom. 1. p. 79. tab. 1. fig. 1.* In Seba's figure, there are only three toes on the hind feet, instead of five.

Hystrix capite cristato; *Briffon. quad. p. 85.*

Hystrix cristata, palmis tetradactylis, plantis pentadactylis, capite cristato, cauda abbreviata; *Linn. syst. nat. p. 76. Hafselquist. itin. p. 290.*

ing noise it makes. It differs from the hog as much as any other quadruped, both in figure and internal structure. Instead of a long head, furnished with long ears, armed with tusks, and terminated by a snout; instead of cloven feet, covered with hoofs, like the hog; the porcupine has a short head, like the beaver, two large cutting teeth in each jaw, no tusks or canine teeth, the upper lip divided like that of the hare, round flat ears, and feet armed with claws. Instead of a large stomach with an appendix shaped like a cowl, which, in the hog, seems to form the shade between the ruminating and other quadrupeds, the porcupine has only a simple stomach and a large caecum. The parts of generation are not apparent, as in the boar; and the testicles are hid in the groins. From these characters, joined to the short tail, the long whiskers, and the divided lip, we may conclude that the porcupine makes a nearer approach to the hare, or the beaver, than the hog. The hedgehog, which, like the porcupine, is armed with prickles, has a greater resemblance to the hog; for its muzzle is long, and terminates in a kind of snout. But, all these resemblances being slight, and the differences conspicuous, the porcupine unquestionably constitutes a particular species, totally distinct from that of the hedgehog, the beaver, the hare, or any other animal to which fancy may compare it.

Travellers

Travellers and naturalists have attributed to the porcupine the faculty of darting its quills to a distance, and with such force as to inflict deep wounds: They have likewise said, that the quills, when separated from the body of the animal, possess the extraordinary power of penetrating, by their own proper exertion, deeper into the flesh, as soon as their points have entered. This last fact is purely imaginary, and the first is equally false as the second. The error seems to have originated from this circumstance, that the porcupine, when irritated, erects and moves his quills; and, as some of them are attached to the skin only by a delicate pedicle, they easily fall off. We have examined living porcupines, and, though violently agitated, we never saw them discharge their quills like darts. It is not a little surprising, therefore, that the gravest authors, both antient * and modern †, as well

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* Arist. hist. anim. lib. 9. cap. 39. Plin. hist. nat. lib. 8. cap. 53. Oppian. de venatione.

† Those quills, say the anatomists of the academy of sciences, which were strongest and shortest, easily parted from the skin, being less firmly attached to it than the others. These are likewise the quills which the porcupines dart against the hunters, by shaking their skin as dogs do when they come out of the water. Claudian, in the same manner, remarks, that the porcupine is himself the bow, the quiver, and the arrow, which he employs against the hunters; *Mém. pour servir à l'hist. des animaux, tom. 3. p. 114.* Note. Fable is the province of the poet; and therefore Claudian merits no reproach. But the anatomists of the academy should not have adopted this fable, which they seem to have done for no other

as the most sensible travellers *, should join in giving their suffrages to a falsehood. Some of them tell us, that they themselves have been wounded by these darts: Others affirm, that the quills are discharged with such violence as to pierce a plank at the distance of several paces †. The marvellous always augments and gathers force in proportion to the number of heads through which it passes. Truth, on the contrary, loses in performing the same route. Notwithstanding the absolute negative I have stamped on these two fictions, I am persuaded that it will still be repeated by a thousand future writers, that the porcupine darts his quills, and that these quills, when separated from the animal, penetrate deeper, by their own proper exertion, into the bodies which they have once entered ‡.

The

other purpose than that of quoting Claudian; for, from their own account, it appears that the porcupine does not dart his quills to a distance, but that they only fall off when he shakes himself; *Wannius, Mus. Wormian. p. 125. Wotton, p. 56. Aldrov. de quad. digit. p. 473.* and several other respectable writers, have adopted this error.

* Tavernier, tom. 2. p. 20. Kolbe, tom. 3. p. 46. Barbot, Hist. gen. des voyages, tom. 4. p. 237.

† When the porcupine is enraged, he darts his quills, which are sometimes two spans in length, with such rapidity and force, against men and other animals, that they will pierce a plank of wood; *Voyage en Guinée, par Bosman, p. 253.*

‡ From this group of credulous travellers, we must except Dr Shaw. * Of the many porcupines which I have seen in Africa, I never knew any of them, though very much provoked,

The porcupine, though originally a native of the warmest climates of Africa and India, can exist and multiply in colder countries, such as Persia, Spain, and Italy. Agricola remarks, that the porcupine was not transported into Europe long before his time. It is found in Spain, and more commonly in Italy, particularly in the Appennine mountains in the environs of Rome. It was from this last place that M. Mauduit, who, stimulated by his love of natural history, sent us the porcupine which M. Daubenton has described. We have given the figure of this Italian porcupine, as well as that of India. The slight differences between them depend on the climate, or perhaps they are only individual varieties.

VOL. VII. K Aristotle

voked, that could dart their quills. Their usual method of defence is, to recline themselves on one side, and, upon the enemy's near approach, to rise up quickly, and gore him with the erected prickles upon the other; *Shaw's travels*, p. 176. P. Vincent-Marie by no means asserts that the porcupine darts his quills: He only says, that this animal, when he meets with serpents, against whom he carries on a perpetual war, rolls himself up like a ball, concealing his head and feet, and then rolls upon, and kills them with his bristles, without running any risk of being wounded. He adds, what we believe to be true, that, in the stomach of the porcupine, different kinds of bezoar are formed. Some of these are only a mass of roots enveloped with a crust; others, which are smaller, seem to be composed of pieces of straw and sand; and the smallest kind, which exceed not the size of a nut, appear to be real petrifications. We have no doubt as to the truth of these facts; for we found a bezoar of the first kind, or an *aegagropilus*, in the stomach of a porcupine which was sent to us from Italy.

Aristotle, Pliny, and all the naturalists, tell us, that the porcupine, like the bear, conceals itself during the winter, and brings forth in thirty days. These facts we have not been able to ascertain; and it is singular, that, in Italy, where the animal is common, and where, at all periods, there have been learned philosophers and acute observers, no man has ever written its history. On this subject, as well as on many others, Aldrovandus has only copied Gefner; and the Gentlemen of the Academy, who have described and dissected eight porcupines, say little or nothing concerning their oeconomy and manners. We only learn from the testimony of travellers, and of those who keep the porcupine in menageries, that, in a domestic state, it is neither wild nor ferocious, but only anxious for liberty; and that, by the assistance of fore teeth, which are strong and sharp, like those of the beaver, it cuts wood, and pierces the door of its cage*. We likewise know, that it is easily fed upon crumbs of bread, cheese, and fruits; that, in a state of liberty, it lives upon roots and wild seeds; that, when it gets admision to a garden, it makes great havock, and devours all kinds of pot-herbs with avidity; that, like most other animals, it becomes

* There are porcupines in Guiney. They grow to the height of two or two and a half feet, and their teeth are so sharp and strong that no wood can resist them. I put one into a barrel, imagining that it was sufficiently secured: But, in one night, it gnawed through the wood, and made its escape; *Voyage de Bosman*, p. 253.

becomes fat about the end of summer; and that its flesh, though somewhat insipid, is not bad to eat.

By examining the form, substance, and organization of the prickles, we easily perceive that they are tubes, and only want vanes to be real feathers. From this circumstance, the porcupine constitutes the shade between quadrupeds and birds. The quills, particularly those near the tail, make a noise by striking each other when the animal walks. He can elevate or depress his quills, as the peacock raises or lowers the feathers of his tail. Hence the muscular part of the skin is capable of acting with force, and its structure is nearly the same as that of some birds. We have marked these relations, though not very apparent. It is always fixing one point in Nature, who often escapes our researches, and seems, in her productions, to sport with those who wish to cultivate her acquaintance.

The

THE COENDOU, or BRASILI- AN PORCUPINE*.

IN every article we have treated of, there are more errors to detect than truths to relate. The source of these errors is to be derived from this circumstance, that, of late, the history of animals

* The Brazilian Porcupine has a short blunt nose, and long white whiskers. Beneath the nose is a bed of small spines. The top of the head, back, sides, and base of the tail, are covered with spines. The longest on the lower part of the back and tail are three inches in length, very sharp, white, and barred near their points with black. They adhere closely to the skin, which is quite naked between them. They are shorter and weaker as they approach the belly; and, on the breast, belly, and lower part of the legs, they are converted into dark brown bristles. The feet are divided into four toes, and the claws are very long. On the place of the thumb, there is a great protuberance. The tail is eighteen inches long, slender, and taper towards the end; the last ten inches of it is almost naked, having only a few hairs on it, and has, for that length, a strong prehensile quality; *Pennant's Synopsis of quad. p. 264.*

Coendou; the name of this animal in Guiana;

Coendou; *Mission du P. d'Abbeville au Maragnon, p. 249.*

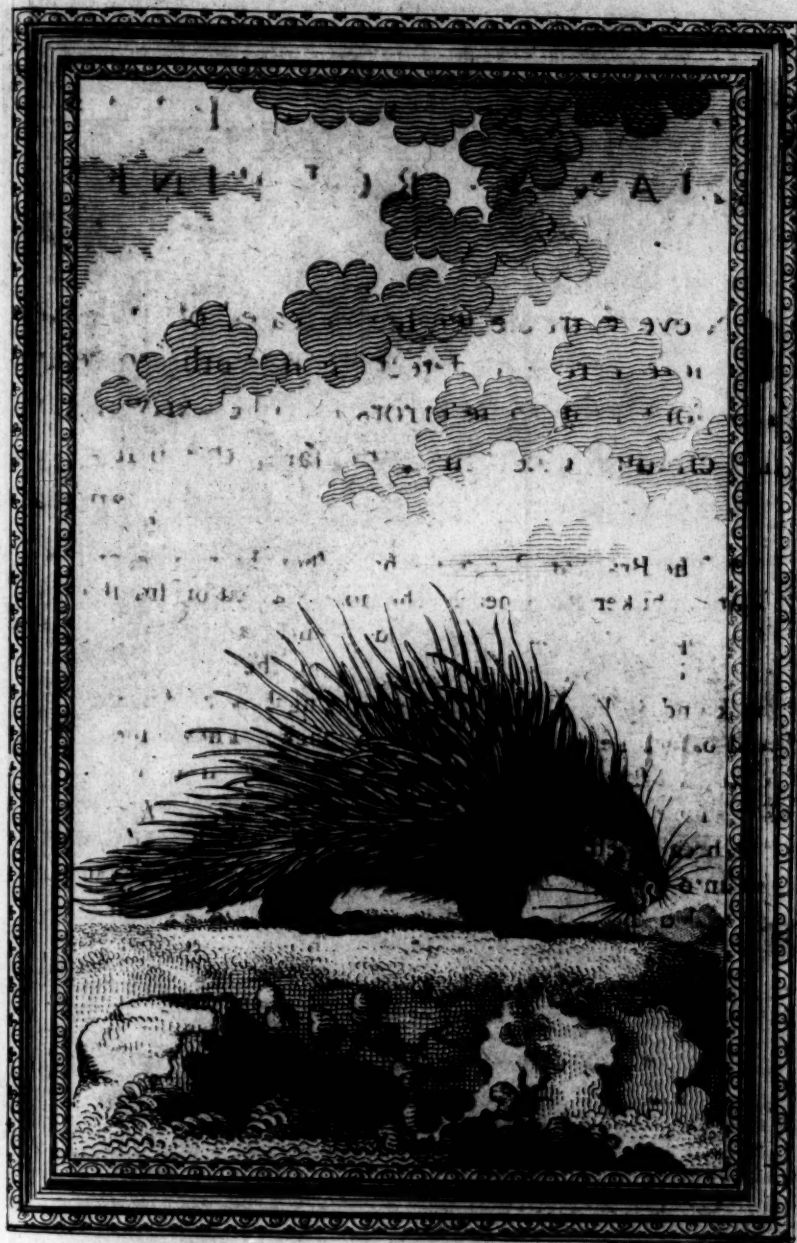
Hoitztlacuatzin, seu tlacuatzin, spinoso hystrice novae Hispania; *Hernandez, Hist. Mex. p. 322. Nieremberg, p. 154.*

Ourico caheiro, *Marcgrav. Brasil. p. 233. Piso, Brasil, p. 99. 325.*

Hystrix Americanus; *Raii Synopsis. p. 208.*

Hystrix prehensilis, pedibus tetradactylis, cauda elongata, prehensili, seminuda; *Linn. Syst. Nat. p. 76.*

Hystrix



A. Bell Sculp.

PORCUPINE.

Plate CCVI.



A. Bell, sculp.

PORCUPINE.

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animals has been solely composed by men who are prejudiced with methodical arrangements; and who mistake their trifling systems for the genuine registers of Nature. No animals belonging to the warm climates of the Old Continent exist in America; neither are any of the South American animals to be found under the Torrid Zone of Africa and Asia. The porcupine, as formerly remarked, is an original inhabitant of the warm countries of the Old World; and, having never been found in the New, his name has been transferred to such animals as resembled him, and particularly that now under consideration. On the other hand, the coendou of America has been transported to the East Indies; and Piso, who probably knew not the Porcupine, made Bontius *, who treats only of animals belonging to the south of Asia, engrave the American coendou under the name of the true porcupine; so that, at first sight, we would be tempted to think that this animal existed equally in America and in Asia. With a little attention, however, it is easy to perceive, that Piso, who, in this article, as well as in most parts of his work, is but the plagiary of Marcgrave, has not

only

Hystrix cauda longissima, tenui, medietate extrema aculeorum experte; Brisson, quad. p. 87.

Hystrix longius caudatus, brevioribus aculeis; Barrère, Franc. Equin. p. 153.

Cuandu, Brasiliensibus, Lusitanis.

Chat épineux; Desmarchais, tom. 3. p. 303.

* Jac. Bontii, Hist. Indiae Orient. p. 54.

only copied Marcgrave's figure of the coendou into his history of Brasil, but likewise engraved it again for Bontius's work, which he digested and published. Hence, though we have the figure of the coendou in Bontius, we must not conclude that it exists in Java, or in any other part of the East Indies, nor take this figure for that of the Porcupine, between which and the coendou there is no similarity, except that both have quills or spines.

It is to Ximenes, and afterwards to Hernandez, that we owe our first knowledge of this animal, which they have pointed out under the Mexican name of *Hoitzlacuatzin*. The *tlacuatzin* is the opossum, and *hoitzlacuatzin* should be translated the *bristly* or *spinous opossum*. This denomination has been ill applied; for these animals have very little resemblance. Marcgrave has not adopted this Mexican name, but calls the animal by its Brazilian name, *cuandu*. Marcgrave, however, ought to have perceived, that his Brazilian *cuandu* was the same animal with the *hoitzlacuatzin* of Mexico, especially as his figure and description correspond very well with those of Hernandez, and as Laët, the editor and commentator of Marcgrave, says, in express terms *, that the spinous *tlacuatzin* of Ximenes, and

* Videtur esse idem animal aut saltem simile quod Fr. Ximenes describit sub nomine Tlaquatzin spinosi. De Laët, annotatio in cap. 9. lib. 6. Marcgrave, pag. 233.

and the cuanda, are probably the same animal. From the few notices to be collected from travellers, it appears that there are two varieties of these animals, which the naturalists have copied from Piso * into their catalogues, as two distinct species, namely, the great and the small cuandu †. But the error, or the negligence of Piso, is apparent: for, though he gives these coendous in two separate articles, and seems to regard them as distinct species, he represents both by the same figure: Hence we are entitled to pronounce them to be the same animal. There are also some naturalists who not only make two species of the great and small coendou, but have separated them from the hoitztlacuatzin, and given the whole three as different animals; I acknowledge, indeed, that, though the coendou and hoitztlacuatzin are probably the same animal, their identity is not so certain as that of the great and small coendou.

However

* Cuandu major; *Pison. hist. Bras. pag. 324. fig. pag. 325.*
Cuandu seu cuandu minor; *Pison. Id. pag. 99. fig. ibid.*

† *Hystrix longius caudatus, brevioribus aculeis; Barrère, Hist. Nat. de la Fr. equinox. Porc-epic, pag. 153. . . . Hystrix minor; Leucopheus, Gouandou; id. ibid.*

Hystrix cauda longissima tenui, medietate extrema aculeorum experte. Hystrix Americanus major; Le grand Porc-epic d'Amerique; Briss. Regn. anim. pag. 130. . . . Hystrix cauda longissima, tenui medietate extrema aculeorum experte. Hystrix Americanus; Le porc-epic d'Amerique. Id. pag. 139. Hystrix aculeis apparentibus, cauda brevi et crassa. Hystrix novae Hispaniae. Le porc-epic de la nouvelle Espagne. Id. pag. 127.

However this matter stands, the coendou is not the porcupine. The former is much smaller. His head and muzzle are proportionally shorter. He has no plume or crest on his head, and his upper-lip is not divided. He has a long tail; but that of the porcupine is very short. He is rather a carnivorous than a frugivorous animal; for he endeavours to surprise birds, small quadrupeds, and poultry*, while the porcupine lives upon pot-herbs, roots, and fruit. Like the hedge-hog, he sleeps during the day, and moves about in the night. He climbs trees†, and suspends himself by the tail upon the branches. He may be tamed. He commonly lives in elevated places‡; and he is found through the whole continent of America, from Brasil and Guiana, as far as Louisiana, and the southern parts

* This fact, which is asserted by Marcgrave and Piso, is not certain; for Hernandez, on the contrary, says, that the hoitztlacuatzin feeds upon fruits.

† Scandit arbores sed tardo gressu, quia pollice caret; descendens autem caudam circumvolvitur ne labatur, admodum enim metuit lapsum, nec salire potest; *Marcgrav. Hist. nat. Bras. p. 233.*—We spied a porcupine upon a small tree, which we cut down for the pleasure of seeing the animal fall. —He is very fat, and the natives eat his flesh; *Voyage de la Hontan, tom. 1. p. 82.*

‡ Carnem habet bonam et pergratam; nam assatam saepe comedi, et ab incolis valde aestimatur; *Marcgrav. p. 233.*—His flesh is very good, and it is scalded, like that of the hog. But the savage women previously pull off all the quills from his back, of which they make various trinkets.—After being scalded, washed, and roasted on a spit, it is of equal value with a pig; *Descript. de l'Amerique par Denis, tom. 2. p. 324.*

parts of Canada. But the porcupine is confined to the warm regions of the Old Continent.

By conferring the name of porcupine upon the coendou, the same powers have also been ascribed to him, particularly that of shooting his quills. It is astonishing, that naturalists and voyagers should agree in this fact, and that Pissot, who ought to have been less superstitious, because he was a physician, should gravely tell us, that the quills of the coendou pierce the flesh by their own proper force, and penetrate into the bowels of an animal. Though these facts be evidently absurd, Ray is the first author who denied them. But how many absurdities have been exposed by men of sense, which are still daily affirmed by other men who believe they possess a greater portion of it?

S U P P L E M E N T.

In Guiana there are two species of Coendous. The largest weighs from twelve to fifteen pounds. They keep always on the highest trees. They eat none during the day. Their odour is very strong, and is felt at a great distance. The females bring forth their young, to the number of two, in the holes of trees. They feed on the leaves of these trees, and are not very common.

Their flesh is extremely good; and the negroes prefer it to that of the paca. According to M. de la Borde, the two species never mix. They are never found in pairs, except in the season of love. At other times, they are solitary; and the females never quit the tree in which they have brought forth. These animals are apt to bite; but their bite is not sore or dangerous.

The individuals of the small species weigh about six pounds. They are not more numerous than the others. The tigers are deadly foes to the coendous; and they never appear on the ground during the day.

The

Plate CCVII.



A. Bell Sculpt.

COENDOT

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The CANADA PORCUPINE*.

THIS animal has never received a proper name. Placed by Nature in the desert regions of North America, it enjoys an independent existence, remote from man, from whom it has obtained no denomination, which is the first badge of his empire. Hudson having discovered the land which it inhabits, we shall give it a name which recalls that of its first master,

* The Canada porcupine has short ears, hid in the fur. The head, body, legs, and upper part of the tail, are covered with soft, long, dark brown hair. On the upper part of the head, back, body, and tail, there are numbers of sharp, strong quills: The longest are on the back, the least towards the head and sides. The longest are three inches; but all are hid in the hair. Intermixed are some stiff straggling hairs, three inches longer than the rest, and tipped with dirty white. The under side of the tail is white. There are four toes on the fore feet, five behind, each armed with long claws, hollowed on their under side. The form of the body is exactly that of the beaver, but is not half the size. One which Mr Banks brought from Newfoundland was about the size of a hare, but more compactly made. The tail was about six inches long; *Pennant's Synops. of quad.* p. 266.

The porcupine from Hudson's Bay; *Edw. hist. of Birds*, p. 52. *Ellis's Voyag.* p. 42. *Clerk's Voy.* vol. 1. p. 177. 191.

Cavia Hudsonis; *Klein. quad.* p. 51.

Hystrix aculeis sub pilis occultis, cauda brevi et crassa; *Brisson. quad.* p. 87.

Hystrix dorsata, palmis tetradactylis, plantis pentadactylis, cauda mediocri, dorso solo spinoso; *Linn. syst. nat.* p. 76.

L'Urson; *Buffon*.

master, and indicates, at the same time, its poignant and bristly nature. Besides, it was necessary to bestow a name upon it, to prevent its being confounded with the porcupine, or the coendou, which it resembles in some characters, but differs so widely from them in all others, that it ought to be regarded as a particular species. It likewise belongs to a northern climate, while the other two are natives of the south.

Edwards, Ellis, and Catesby, have all mentioned this animal. The figures given by the two first authors correspond with ours; and we doubt not but they are the same species. We are even tempted to believe, that the animal described and engraven by Seba *, under the name of a *singular East India porcupine*, and which was afterwards pointed out by Klein †, Brisson ‡, and Linnaeus §, in their methodical catalogues, by the characters given by Seba, might be the same with the animal under question. This would not, as formerly remarked, be the only time that Seba has exhibited American animals as belonging to the East Indies. We cannot, however,

* *Porcus aculeatus sylvestris, sive Hystrix orientalis singularis*; Seba, vol. 1. p. 84. tab. 52. fig. 1.

† *Acanthion cauda prolunga acutis pilis horrida, in exitu quasi panniculata*; Klein. de quad. p. 67.

‡ *Hystrix cauda longissima, aculeis undique obsita, in extremo panniculata. Hystrix orientalis*. The Indian porcupine; Brisson. regn. anim. p. 131.

§ *Hystrix macroura, pedibus pentadactylis, cauda longissima, aculeis clavatis*; Linn. syst. nat. p. 77.

Plate C CVIII.



A. B. Bell's Engraving.

URSON.

however, be so certain with regard to this animal as we have been with several others. We shall only say, that the resemblances appear to be very great, and the differences but slight; and that, as these animals are little known, the differences may be only individual varieties, or those which distinguish males and females.

The Canada porcupine might be called the *bristly beaver*. It is a native of the same country, is of the same size, and has nearly the same figure. Like the beaver, it has two long, sharp, and strong cutting teeth in each jaw. Independent of its quills, which are short, and almost concealed among the hair, it has, like the beaver, a double fur, the first consisting of long soft hairs, and the second of a down still more soft. When the animal is young, the quills are proportionally larger, and more apparent, and the hairs are shorter and thinner than in the adults.

This animal avoids all kinds of moisture. He retires and deposits his excrements under the roots of hollow trees*. He sleeps much, and feeds chiefly on the bark of the juniper bushes. In winter, the snow serves him for drink; and, in summer, he drinks water, which he laps like a dog. The savages eat his flesh, and clothe themselves with his fur, after depriving it of the quills and bristles.

The

* See Edwards, *hist. of Birds*, p. 52.

THE CANADA PORCUPINE.

23

however, be so certain with regard to this animal as we have been with several others.

The TANREC and the TENDRAC, Or ASIATIC HEDGEHOG*.

THE *Tanrecs* or *Tendrac*s are small East Indian animals which have some resemblance to our hedgehog, but differ so much from it as to constitute a distinct species. This is apparent, independent

* The *Tendrac*, or Asiatic hedgehog, with a long slender nose, short rounded ears, and short legs. The upper part of the body is covered with short spines, white, and marked cross the middle with rust colour. The face, throat, belly, buttocks, and legs are thinly covered with whitish, fine, but hard hair. The tail is very short, and covered with spines. About the nose there are some hairs above two inches long. It is of the size of a mole.

The other, or the *Tanrec*, is rather larger. It is covered with spines only on the top and hind part of the head, the top and sides of the neck, and the shoulders; the longest were on the upper part of the neck, and stood erect. The rest of the body was covered with yellowish bristles, among which were intermixed some that were black, and much longer than the others. Each of these animals, which are varieties of the same species, had five toes on each foot; *Pennant's Synops. of quad. p. 317.*

Erinaceus Americanus albus; *Seba, tom. 1. p. 78. tab. 49. fig. 3.*—This hedgehog, which *Seba* says was sent to him from Amboyna, has so strong a resemblance to the *tendrac*, that it must be the same animal; and, if it is a native of Madagascar, it ought not to be found in America. With regard to this animal, *Seba* is wrong in every article; for it neither belongs to America, nor is it white, but only less brown than our European hedgehog.

independent of inspection or comparison; for they never roll themselves up into a ball, like the hedgehog; and besides, the tanrecs are found in Madagascar, where there are also hedgehogs of the same kind with ours, which bear not the name of *tanrec*, but are called *Sora**.

There seems to be two species, or perhaps two races of tanrecs: The first, which is nearly as large as our hedgehog, has a muzzle proportionally longer than the second; its ears are also more apparent, and it has fewer bristles than the other, to which we have given the name of *Tendrac*, to distinguish it from the first. This *tendrac* is not larger than a great rat. Its muzzle and ears are shorter than those of the *tanrec*, which last is covered with smaller bristles, but equally numerous with those of the hedgehog. The *tendrac*, on the contrary, has no spines but on the head, the neck, and the withers, the rest of the body being covered with coarse hair, like hogs bristles.

These small animals, which have short legs, move very slowly. They grunt and wallow in the mire like hogs†. They are fond of water, in which they dwell longer than upon land. They are caught in salt water, canals, and in small gulfs of the sea. They are very ardent

* Voyage a Madagascar, par Flacourt, p. 152.

† Recueil des voyages qui ont servir à l'établissement de la Compagnie des Indes de Hollande, tom. 1. p. 412.

ardent in their amours, and multiply greatly*. They dig holes in the ground, into which they retire, and lie in a torpid state during several months. In this state, their hair falls off, which grows again after they awake. They are generally very fat; and, though their flesh be insipid and reedy, the Indians eat it with pleasure.

SECOND

* Relation de Fr. Cauche, p. 127.—Voyages de la Compagnie des Indes de Hollande, p. 412.

Plate CCIX.



A. Bell Sculp.

TANREC.

Plate CCX.



A. B. S. del.

TENDRAC.



SECOND VIEW OF NATURE.

INDIVIDUALS, whatever their kind or number may be, are of no value in the universe. Species are the only existences in Nature; for they are equally antient and permanent with herself. To form a distinct idea of this subject, we shall not consider species as a collection or succession of similar individuals, but as a whole, independent of number and of time, always active and always the same; a whole, which has been reckoned one in the works of creation, and, therefore, constitutes only a unit in Nature. Of all those units, the human species holds the first rank: The others, from the elephant to the mite, from the cedar to the hyssop, are in the second and third orders. Though different in form, in substance, and even in life, each retains its proper place, subsists by itself, defends itself against the others, and the whole together represent animated Nature, who supports, and will continue to support herself in the same manner as we now behold her. A day, a year, an age, or any given portion of time, constitutes no part of her duration. Time itself relates only to individuals, to beings whose existence is fugitive. But the existence of species is constant; their permanence produces duration, and their differ-

rences give rise to number. Let us consider species in this light; let us give to each an equal right to the indulgence and support of Nature. To her they are all equally dear; for, on each of them, she has bestowed the means of subsisting, and of lasting as long as herself.

Let us now suppose the species to change places with the individual. We have already seen what Nature is in relation to man; let us next consider in what light she would appear to a being who represented the whole human species. In the spring, the verdure of the fields revives, the buds and flowers expand, the bees recover from their torpid state, the swallow returns to our land, the nightingale chants the song of love, the ram frisks, the bull lows with desire, and all animated creatures are eager to join and to multiply their species; we have then no idea but that of reproduction and the increase of life. On the other hand, when the dark season of cold and frost approaches, animated beings become indifferent, and even avoid each other; the inhabitants of the air desert our climates, those of the water lose their freedom under vaults of ice; most animals grow torpid, and dig retreats for themselves in the ground; the earth hardens, the plants wither, and the trees, deprived of their foliage, bend under loads of snow and hoar-frost; every object excites the idea of languor and annihilation. But these ideas of renovation and destruction, or rather these

these images of death and life, however great and general they appear, are only individual and particular. Man, as an individual, thinks in this manner: But the being whom we have substituted for the species, thinks and judges in a manner more sublime and general. In this alternate destruction and renovation, in all these successive vicissitudes, he perceives only permanence and duration. The season of one year is to him the same as that of the preceding, the same as that of millions of ages. The thousandth animal, in the order of generation, is the same to him as the first. In fine, if man lived for ever, if all the beings which surround him existed in the same manner as they do at present, the idea of time would vanish, and the individual would become the species.

Why should we not consider Nature, for a few moments, under this new aspect? In truth, man comes into this world enveloped in darkness. The mind being equally naked with the body, he is born without knowledge and without defence. He brings nothing with him but passive qualities. He is obliged to receive the impressions of objects on his organs; the light shines long on his eyes before he can recognise it. At first, he receives every thing from Nature, and makes her no returns. But, as soon as his senses have acquired strength and activity, as soon as he can compare his sensations, he reflects upon the universe; he forms ideas, and
retains,

retains, extends, and combines them. Man, especially when he has been instructed, is not a simple individual: He represents, in a great measure, the whole human species. He begins with receiving from his parents the knowledge which had been transmitted to them from their fathers; thus, by means of the divine arts of writing and printing, the present age is, in some measure, identified with those that are past. This accumulation, in one man, of the experience of many centuries, extends the limits of his being to infinity. He is no more a simple individual, born, like other animals, with the capacity of attending to present sensations alone: He is nearly the being we supposed to represent the whole species. He reads what is past, sees the present, and judges of the future; and, in the torrent of time, which carries off and absorbs all the individuals of the universe, he perceives that the species are permanent, and Nature invariable. The relations of objects being always the same, to him the order of time appears to be nothing. In his eyes, the laws of renovation only counterbalance those of permanence: A continual succession of similar beings is, in effect, equivalent only to the perpetual existence of one of these beings.

What purposes, then, are served by this vast train of generations, this immense profusion of germs, many thousands of which are abortive for one that succeeds? Does not this perpetual propagation

propagation of beings, which are incessantly destroyed and renewed, uniformly exhibit the same scene, and occupy neither more nor less of Nature? From whence proceed those alterations of life and death, those laws of growth and decay, all those individual vicissitudes, and all those reiterated representations of one and the same thing? They are derived from the very essence of Nature, and depend on the first establishment of the universal machine; the whole of which is fixed and stable; but each of its parts being capable of motion, the general movements of the celestial bodies have produced the particular motions of this terrestrial globe. The penetrating forces by which these immense bodies are animated, by which they act reciprocally upon each other at a distance, animate at the same time every particle of matter; and this mutual propensity of all the parts toward each other, is the first bond of beings, the principle of confidence and permanency in Nature, and the support of harmony in the universe. The great combinations give rise to the smaller relations: The motion of the earth on its own axis having divided the portions of duration into day and night, all its animated inhabitants have their times of light and of darkness, of waking and sleeping. The action of the senses, and the motions of the members, which constitute a great part of the animal oeconomy, are related to this first combination. Would there be senses alive

to

to light in a world where perpetual darkness reigned?

The inclination of the axis of the earth producing, in its annual motion round the sun, considerable changes of heat and cold, which we call *seasons*, all vegetables have also, either totally or partially, their seasons of life and of death. The fall of the leaves and fruits, the withering of herbs, and the destruction of insects, depend entirely on this second combination. In climates where it does not take place, the life of vegetables is never suspended, and every insect completes its peculiar period of existence. Under the line, where the four seasons make but one, the earth is always covered with flowers, the trees are in perpetual verdure, and Nature enjoys a continual spring.

The particular constitution of animals and of plants is relative to the general temperature of the earth, and this temperature depends on the situation or distance of the earth from the sun. If removed to a greater distance, our animals and plants could neither live nor vegetate. The water, the sap, the blood, all the liquors, would lose their fluidity: At a smaller distance, they would vanish and dissipate in vapour. Ice and fire are the elements of death; temperate heat is the first germ of life.

The living particles diffused through organized bodies are related, both by their activity and number, to the particles of light, which strike
and

and penetrate all matter with their heat. Wherever the rays of the sun can heat the earth, its surface is covered with verdure, and peopled with animals. Even ice itself, as soon as it dissolves into water, seems to be fecundated. This element is more fertile than that of the earth: From heat it receives motion and life. The sea produces, every season, more animals than the earth sustains: But it produces fewer vegetables. Hence all the animals which inhabit the ocean, by not having, like those on the land, a permanent stock of vegetable substances to support them, are under the necessity of feeding upon each other; and to this combination their immense multiplication is to be referred.

Every species having been originally created, the first individuals served as a model to their descendants. The body of each animal or vegetable is a mould, to which are assimilated indifferently the organic particles of all animals or vegetables which have been destroyed by death or consumed by time. The brute particles, which formed part of their composition, return to the common mass of inanimated matter. But the organic particles, whose duration is permanent, are resumed by organized bodies: They are first extracted from the earth by vegetables, then absorbed by animals which feed upon vegetables, and thus serve for the expansion, support, and growth of both. By circulating perpetually from body to body, they animate all organized

organized beings. The stock of these living substances is always the same. They vary only in form, or in difference of appearance. In fertile ages, during the times of the greatest population, the whole surface of the earth seems to be covered with men, domestic animals, and useful plants. But, during the period of famine and depopulation, the ferocious animals, noxious insects, parasitical plants, and useless herbs, resume, in their turn, dominion over the earth. These changes, so sensible to man, are perfectly indifferent to Nature: The silk-worm, so precious to us, is to her only the caterpillar of the mulberry tree. Though this caterpillar, which ministers to our luxury, should disappear, though the plants which nourish our domestic animals should be devoured by other caterpillars, though others should threaten with destruction the substance of our corns before the harvest, in fine, though man and the larger animals should be starved by the inferior tribes, Nature would not be less full, nor less alive. She protects not one at the expence of another; she equally supports the whole. But, with regard to individuals, she knows not number, and views them only as successive images of the same impression, as fugitive shadows, of which the species is the substance.

— There exists, therefore, in the earth, air, and waters, a determined quantity of organic matter which nothing can destroy, and, at the same time, a determined number of moulds capable of

of assimilating it; and these moulds are perpetually annihilated and renewed. This number of moulds, or individuals, though variable in every species, is, upon the whole, always the same, always proportioned to the quantity of living matter. If this matter were redundant, if it were not at all times equally occupied, and entirely absorbed by the moulds which already exist, it would form others, and produce new species. Being alive, it never remains without action; and its union with brute matter is sufficient to constitute organized bodies. It is to this great combination, or rather to this invARIABLE proportion, that Nature owes her form and consistence.

As the laws of Nature regarding the number, support, and equilibrium, of the species, are fixed and permanent, she would uniformly exhibit the same appearances, and, in all climates and times, would be absolutely and relatively the same, if her complexion did not vary almost infinitely in individual forms. The impression of each species is a figure, the principal features of which are engraven in characters which can never be effaced. But all the accessory shades and touches are greatly diversified; no individual has a perfect resemblance to another; no species exists without a number of varieties. In the human species, which bears the strongest marks of divinity, the impression varies from white to black, from small to great, &c. The

Laplander, the Patagonian, the Hottentot, the European, the American, and the Negro, though sprung from the same parents, have by no means the similarity of brothers.

All species, therefore, are subject to individual differences: But the constant varieties, which are perpetuated through successive generations, belong not equally to every species. The more dignified the species, its figure is the more fixed, and admits of fewer varieties. The multiplication of animals being inversely proportional to their magnitude, and the possibility of differences being in the direct proportion to the numbers they produce, there must necessarily be more varieties among the small than the large animals, and, for the same reason, a greater number of species which make a near approach to each other. In large animals, the unity of the species is more fixed, and the distance which separates them is also more extended. How many varieties and neighbouring species accompany, follow, or precede the squirrel, the rat, and other small quadrupeds, while the majestic elephant walks alone, and without a peer, at the head of the whole?

The brute matter, of which the mass of the earth is composed, is a virgin or untouched substance, that has undergone no alterations. But the whole has been more than once put in motion, and disturbed by the hand of Nature. The globe of the earth has been penetrated by fire, and

and afterwards covered and disordered by water. The sand which fills the interior parts of the earth is a vitrified matter. The thick beds of clay which cover its surface, are only the same sand decomposed by the operation of the waters. Granite, free stone, flint, and all the metals, are nothing but this same vitrified matter, the particles of which are united, condensed, or separated, according to the laws of their affinity. All these substances are perfectly inanimate: They exist, and will continue to exist, independent of animals and vegetables. But there are many other substances, which, though they appear to be equally inanimate, derive their origin from organized bodies: Marble, limestone, chalk, and marle, are composed of the spoils of shells, and of those small animals which, by transforming the water of the sea into stone, produce coral, and all the madrepores, the varieties of which are numberless, and the quantity almost immense. Pit coal, turf, and other substances, also found in the superior strata of the earth, are nothing but the residue of vegetables more or less corrupted and consumed. In fine, there are other substances, though fewer in number, such as pumice stones, sulphur, the scoriae of iron, asbestos, and lava, which have been thrown out by volcanoes, and produced by a second action of fire upon the original matters. To these three great combinations may be referred all the relations

relations of brute matter, and all the substances of the mineral kingdom.

The laws of affinity, by which the constituent particles of these different substances separate from each other, in order to unite among themselves, and form homogeneous masses, are the same with that general law by which the celestial bodies act upon one another. Their exertions are mutual, and proportioned to their masses and distances. Globules of water, of sand, or of metal, act upon each other in the same manner as the earth acts upon the moon: And, if these laws of affinity have hitherto been regarded as different from those of gravity, it must be ascribed to the confined views we have taken of the subject. Figure, which, in the celestial bodies, has almost no effect upon their mutual action, because the distance is too great, has great influence when the distance is very small. If the earth and moon, instead of a spherical figure, were both short cylinders, and equal throughout in their diameters, their reciprocal action would not be sensibly altered by this difference of figure, because the distance of all the parts of the moon from those of the earth would be very little changed. But, if these same globes were cylinders of great extent, and placed near each other, the law of their reciprocal action would appear to be very different; because the relative distances of their parts would be greatly varied. Hence, whenever figure becomes a principle in
distance,

distance, the law seems to vary, though, in fact, it remains always the same.

From this principle, the human intellect may advance one step farther, and penetrate deeper into the operations of Nature. We are ignorant of the figure of the constituent particles of bodies. Water, air, earth, metals, and all homogeneous substances, are unquestionably composed of elementary particles, which are similar among themselves, but whose figure is unknown. Posterity, by the aid of calculation, may disclose this new field of knowledge, and ascertain, with considerable precision, the figure of the elements of bodies. They will take the principle we have established as the basis of their reasoning: *All matter is attracted in the inverse ratio of the square of the distance; and this law seems to admit of no variation in particular attractions, but what arises from the figure of the constituent particles of each substance; because this figure enters as an element or principle into the distance.* Hence, when they discover, by reiterated experiments, the law of attraction in any particular substance, they may find, by calculation, the figure of its constituent particles. To make this matter more clear, let us suppose, that, by placing mercury on a perfectly polished surface, we find, by experiment, that this fluid metal is always attracted in the inverse ratio of the cube of the distance, we must investigate, by the rules of false position, what figure gives this expression; and

and this figure will be that of the constituent particles of mercury. If, from these experiments, it appeared that the attraction of mercury was in the inverse ratio of the square of the distance, it would be demonstrated that its constituent particles are spherical; because a sphere is the only figure which observes this law, and, at whatever distance globes are placed, the law of their attraction is always the same.

Newton conjectured, that chemical affinities, which are nothing but the particular attractions we have mentioned, were produced by laws similar to those of gravitation. But he seems not to have perceived, that all these particular laws were only simple modifications of the general law, and that they appeared to be different, only because, at very small distances, the figure of atoms which attract each other has a greater influence upon the expression of this law, than the mass of matter.

Upon this theory, however, the intimate knowledge of the composition of brute matter solely depends. The basis of all matter is the same; and the form of it would likewise be the same, if the figure of its constituent particles were perfectly similar. One homogeneous substance cannot differ from another, but in proportion to the difference of the figures of their primitive particles. A body, of which all the particles are spherical, ought to be one half specifically lighter than another whose particles
are

are cubical; because the first, by touching each other only in points, leave intervals equal to the spaces they occupy, while the cubical particles unite without leaving the smallest void, and, consequently, form a matter one half heavier than the first. Though figures may be infinitely varied, they seem not to be so numerous in Nature as might be imagined; for she has fixed the limits of gravity and levity. Gold and air are the two extremes of density. All the figures admitted by Nature, therefore, are comprehended between these two terms; and all those which would have produced heavier or lighter substances have been rejected.

When I speak of figures employed by Nature, I mean not that they are necessarily, or even exactly, similar to those geometrical figures which exist in our imagination. We make laws by supposition, and we render them simple by abstraction. There are, perhaps, neither exact cubes, nor perfect spheres in the universe. But, as nothing exists without form, and as, according to the diversity of substances, the figures of the elements are different, some of them must necessarily approach to the sphere, the cube, and all the other regular figures which we have conceived. The precise, the absolute, the abstract, which so often present themselves to our minds, can have no real existence, because all objects are related, differ only by almost imperceptible shades, and are allied by approximation. In the

the same manner, when I mention one substance as being entirely full, because it is composed of cubical particles, and another as being only half full, because its constituent particles are spherical, I speak only comparatively, and mean not that such substances really exist; for we know from experience, that, in transparent bodies, such as glass, which is both dense and heavy, the quantity of matter is very small in proportion to the extent of the intervals; and it might be demonstrated, that gold, which is the densest species of matter, contains more vacuities than substance.

The consideration of the powers of Nature is the object of rational mechanics; that of sensible mechanics is only a combination of particular powers, and is reduced to the art of constructing machines. Necessity and convenience have at all times insured the culture of this art. The antients excelled in it as well as the moderns. But rational mechanics is a science invented in our days. All philosophers, from Aristotle to Descartes, have reasoned like the vulgar upon the nature of motion. They have uniformly mistaken the effect for the cause. They knew no force but that of impulsion, to which they attributed the effects of other forces, and referred to it all the phaenomena of the universe. If the notion had been plausible, or even possible, this impulsion, which they regarded as the sole cause, must at least have been a general effect, which equally

ly belonged to all matter, and which continually exerted itself in all places, and at all times. The opposite was daily demonstrated to them. Did they not perceive, that, in bodies at rest, this force had no existence; that, in projected bodies, it subsisted but a short time, and was soon destroyed by resistance; that, to renew it, a fresh impulse was necessary; and that, consequently, so far from being a general cause, it was only a particular effect, produced by more general effects?

Now, a general effect is what ought to be called a cause; for the real cause of this effect can never be known to us; because all our knowledge is derived from comparison; and an effect being supposed general, and belonging equally to all matter, we can compare it to nothing, and, of course, can know it only by the fact. Hence attraction, or gravity, being a general effect common to all matter, and demonstrated by the fact, it ought to be regarded as a cause; and to it should be referred all other particular causes, and even that of impulsion, since it is less general and less constant. The difficulty is to perceive how impulsion can be an effect of attraction. If we reflect on the communication of motion by impulse, we will be persuaded that it can only be transmitted from one body to another by elasticity, and that all the hypotheses concerning the communication of motion in hard bodies, are mere fancies,

which have no existence in Nature. A body perfectly hard or perfectly elastic, is a creature of imagination. Neither the one nor the other really exist; because nothing exists absolutely or in extreme, and the idea of perfection is only the absolute or extreme of a thing.

If there was no elasticity in matter, there could be no impulsive force. When we throw a stone, the motion which it acquires is communicated to it by the elasticity of the arm. When a body in motion meets another at rest, how can we conceive that the one should communicate motion to the other in any other manner than by compressing the spring of the elastic particles it contains, which, by recovering itself immediately after compression, gives to the whole mass the same force that it received. We cannot comprehend how a perfectly hard body should admit this force, or receive motion. Besides, the inquiry is useless, as no such body exists. All bodies, on the contrary, are endowed with elasticity. Experiments on electricity prove that its force is elastic, and belongs to matter in general. Though, therefore, no other elasticity existed in the interior parts of bodies but that of this electrical matter, it would be sufficient for the communication of motion; and, consequently, to this great spring, as a general effect, the particular cause of impulsion must be ascribed.

Now,

Now, if we reflect upon the mechanism of elasticity, we shall find, that its force depends on that of attraction. To obtain a clearer perception of this subject, let us suppose the most simple spring, a solid angle of iron; or of any other hard substance: What will be the result of compressing it? We oblige the parts adjacent to the top of the angle to bend, or to separate a little from each other; and, the moment the pressure is removed, they approach each other as formerly. Their adhesion, from which the cohesion of bodies results, is well known to be an effect of their mutual attraction. When the spring is pressed, this adhesion is not destroyed; because, though the particles are separated, they are not so far removed from each other as to put them beyond their sphere of mutual attraction. Of course, as soon as the pressure ceases, this force is again exerted, the separated parts approach, and their spring is restored. If, on the other hand, by a pressure too violent, they are removed beyond the sphere of their attraction, the spring breaks; because the compressing force has been greater than that of cohesion, or than that of the mutual attraction, which keeps the particles together. Hence elasticity can exert itself only in proportion to the cohesion of the particles of matter, that is, in proportion as they are united by the force of their mutual attraction; and, consequently, elasticity in general, which alone can produce impulsion, and the impulsion itself,
are

are owing to the force of attraction, and depend on it as particular effects on a general effect.

However clear these ideas appear to me, I expect not to see them adopted. The people never reason but from their sensations; and natural philosophers judge from their prejudices. All these must, therefore, be set aside, and very few will remain to form a proper judgment. But this is the fate of Truth; she is content with a few admirers, and is always lost in a crowd: Though at all times august and majestic, she is often obscured by fantastic notions, or totally effaced by brilliant chimeras. This, however, is the manner in which I view and understand Nature; and perhaps she is still more simple: A single force is the cause of the phenomena exhibited by brute matter; and this force, when combined with that of heat, produces those living particles on which all the effects of organized bodies depend.

The

The GIRAFFE, or CAMELOPARD *

THE camelopard is one of the most beautiful and largest quadrupeds: Without being noxious, he is at the same time extremely useless. The enormous disproportion of his legs, of which those before are double the length of those behind, prevents him from exercising his powers. His body has no stability; he has a staggering gait; and his movements are slow and constrained. When at liberty, he cannot escape from his enemies, nor can he serve man in

* The camelopard has short strait horns, covered with hair, truncated at the end, and tufted with hair. In the forehead, there is a tubercle about two inches high, resembling a third horn. The height, from the crown of the head to the soles of the fore feet, is seventeen feet, and that from the top of the rump to the bottom of the hind feet, only nine: The length of the body is seven, and from the withers to the loins only six feet. The fore-legs are not longer than the hind legs; but the shoulders are of a vast length, which give the disproportionate height between the fore and hind parts. The horns are six inches long. The head is like that of a stag. The neck is slender and elegant, and on the upper side there is a short mane. The ears are large, and the tail long, with strong hairs at the end. The colour of the whole animal is a dirty white, marked with large, broad, rusty spots; *Pennant's synops. of quad. p. 20.*

Giraffe, a word derived from *Girnassa*, *Sirapbab*, *Zurnaba*, the name of this animal in the Arabian language, which has been adopted by the modern Europeans. *Camelopardalis* in Greek

in a domestic state. The species is not numerous, and has always been confined to the deserts of Æthiopia, and to some provinces in the south of Africa and India. As these countries were unknown to the Greeks, Aristotle has made no mention of this animal. Pliny speaks of it, and Oppian describes it in a manner which is by no means ambiguous *. The Camelopardalis, this last

Greek and Latin. Pliny gives the etymology of this compound name. 'Camelorum,' he remarks, 'aliqua similitudo in aliud transfertur animal, Nabin Ethiopes vocant. Collo similem equo, pedibus et cruribus bovi, camelo capite; albis maculis rutilum colorem distinguuntibus, unde appellata Camelopardalis: Dictatoris Caesaris Circensibus ludis primum visa Romae; ex eo subinde cernitur, aspectu magis quam feritate conspicua: Quare etiam ovis ferae nomen invenit; Hist. nat. lib. 8. cap. 18.

La Giraffe, which the Arabs call Zuraapa; Belon. Obs. p. 118. Leo Afric. p. 337. Gesner quad. p. 160. Raii synops. quad. p. 90. Brisson. quad. p. 37.

Camelopardalis, Camelopardalin sacrae litterae vocant Zamir. Deuter. 14. Ubi Chaldaica translatio habet Deba; Arabica, Saraphah; Persica, Seraphah; Septuaginta Camelopardalin; Hieronimus Camelopardum; Gesner, hist. quad. p. 147. fig. p. 149. ubi legitur, Camelopardalus, icon ex charta quadem nuper impressa Norimbergae — Surnapa nomine altitudine ad summum verticem supra quinque orgyas, corniculis duobus ferrei coloris, pilo levi et composito pulchro; diligenter et probe depictum Constantinopoli et in Germaniam transmissum, anno 1559.

Camelopardalis; Plin. lib. 8. c. 18. Dion Cassius, lib. 43. Praenest. pavem. Shaw's supplement, p. 88. Oppian. cyneg. lib. 3. l. 466. Aldrov. de quad. bisulc. p. 927. fig. p. 931. Prosper Alpin. hist. Egypt. tom. 2. p. 236. tab. 14. fig. 4.

Tragus giraffa; Klein. quad. p. 22.

Cervus camelopardalus, cornibus simplicissimis, pedibus antice longissimis; Linn. Syst. Nat. p. 92.

* Oppian. de Venat. lib. 3.

last author remarks, has some resemblance to the camel. Its skin is spotted like that of the panther, and its neck is as long as that of the camel. Its head and ears are small, its feet large, and its legs long, but unequal, those before being much taller than those behind, which are very short, and seem to bring the rump of the animal down to the ground. Upon the head, near the ears, there are two eminences like two small straight horns. Its mouth resembles that of the stag; the teeth are small and white, the eyes brilliant, the tail short, and garnished with black hairs at the point. By adding to this description of Oppian those of Heliodorus and Strabo, we shall have a pretty just idea of the camelopard. The *Æthiopian* ambassadors, says Heliodorus, brought an animal of the size of a camel, whose skin was marked with lively spots and brilliant colours, and whose posterior parts were much lower than the anterior. The neck, though attached to a pretty large body, was thin. The head, in figure, resembled that of the camel, and, in size, it was not twice as large as that of the ostrich. The eyes appear to be tinged with different colours. The gait of this animal was different from that of all other quadrupeds, who in walking lift their feet diagonally, that is, the right fore foot with the left hind foot. But the camelopard ambles naturally, lifting the two right or the two left feet together. It is a gentle creature, and may be conducted

ducted at pleasure by a small cord put round its head *. There is, says Strabo, a large animal in Æthiopia, called *camelopardalis*, though it has no resemblance to the panther; for its skin is not spotted in the same manner. The spots of the panther are circular, and those of the camelopard resemble the spots of the fawn or young stag. The posterior parts of its body are much lower than the anterior; so that, at the rump, it is not higher than an ox, and at the shoulders it is higher than a camel. From this disproportion of parts, its motions should not be quick. It is a mild animal, does no mischief, and feeds upon herbs and leaves †.

Belon is the first author who has given a good description of the camelopard. 'I saw,' says he, 'at the castle of Cairo, an animal commonly called *Zurnapa*. It was formerly denominated *Camelopardalis*, a name compounded of *leopard* and *camel*; for it is variegated with the spots of a leopard, and has a long neck, like the camel. It is a most beautiful creature, as gentle in its dispositions as a sheep, and more amiable than any other wild beast. Its head is nearly similar to that of the stag, except in size. Its horns are blunt, six inches long, and covered with hair; those of the male are longer than those of the female. Both male and female have large ears, like those of a cow, and a black tongue

* Heliodorus, lib. 10.

† Strabo, lib. 16, et 17.

' tongue resembling that of an ox. It has no
 ' teeth in the upper jaw. The neck is long,
 ' straight, and slender. The horns are round,
 ' and delicate, the legs long and slender, and
 ' those behind are so low, that the animal seems
 ' to stand on end. Its feet resemble those of an
 ' ox. Its tail, which hangs as low as the hock,
 ' is round, having hairs three times as gross as
 ' those of a horse. The hair on the body is
 ' white and red. Its manner of running is si-
 ' milar to that of the camel. When it runs, the
 ' two fore feet move together. It lies on its
 ' belly, and has hard protuberances on its breast
 ' and thighs, like the camel. When standing, it
 ' cannot browse the grass, without spreading its
 ' fore feet very wide, and even then the opera-
 ' tion is performed with great difficulty; for
 ' which reason it could not live in the fields, if
 ' it were not supplied with the leaves and sprigs
 ' of trees*.'

The description of Gillius is still better than
 that of Belon. ' I saw, (says Gillius, chap. 9.)
 ' three giraffes at Cairo. They had two horns,
 ' of six inches in length, and, on the middle of
 ' the front, a protuberance about two inches
 ' high, which resembled a third horn. This a-
 ' nimal, when he raises his head, is sixteen feet
 ' high; the neck alone is seven feet; and the
 ' length, from the extremity of the tail to the end
 ' of the nose, is twenty-two feet. The fore and
 VOL. VII. P hind

* Observ. de Belon, p. 118.

'hind legs are nearly of an equal height. But
 'the fore thighs are so disproportionally long,
 'that the back of the animal inclines like the
 'roof of a house. The whole body is marked
 'with large yellow spots, nearly of a square fi-
 'gure. . . . It has cloven feet like the ox. The
 'upper lip protrudes beyond the under. The
 'tail is slender, with hairs at the point. It ru-
 'minates and eats herbage, like the ox. Its mane
 'extends from the top of the head along the
 'back. When it walks, its legs and flanks on
 'both sides seem to be alternately lame; and,
 'when it browses herbage or drinks, it is obli-
 'ged to spread its fore legs prodigiously wide.'

Gesner quotes Belon for affirming that the
 horns of the giraffe fall off like those of the fal-
 low deer*. I could never discover this fact in
 Belon. He only says, in the above passage, that
 the horns of the giraffe are covered with hair.
 He makes no other mention of this animal, ex-
 cept when treating of the axis, where he remarks,
 'that the ground colour of the giraffe is white,
 'and that the large spots scattered over the body
 'are reddish, but not so red as those of the ax-
 'is†.' This fact, however, which I can no
 where discover, would be of great importance in
 determining the nature of the giraffe; for, if its
 horns shed annually, it belongs to the deer kind;
 and, on the other hand, if its horns are perma-
 nent,

* Giraffis et damis cornua cadunt; Belon, Gesner, *hiff. quad.*
p. 148.

† Observ. de Belon, *p.* 120.

ment, it must be referred to the ox or goat kind. Until we obtain a distinct knowledge of this fact, we cannot affirm, as our nomenclators have done, that the giraffe belongs to the genus of stags; and it is astonishing that Hasselquist, who has lately given a very long, and very inanimated description of this animal, has said nothing concerning its nature. After amassing methodically, that is, like a school-boy, a hundred minute and insignificant characters, he says not a syllable regarding the substance of the horns, and leaves us ignorant whether they are solid or hollow, whether they shed or not, whether, in a word, they are *wood* or horns. I here give Hasselquist's* description, not on account of its utility,

* *Cervus camelopardalis*. Caput prominens, labium superius crassum, inferius tenue; nares oblongae, amplae; pili rigidi, sparsi in utroque labio anterieus et ad latera. Supercilia rigida, distinctissima, serie una composita. Oculi ad latera capitis, vertici quam rostro, ut et fronti quam collo, propiores. Dentes, lingua, cornua simplicissima, cylindrica, brevissima, basi crassa, in vertice capitis sita, pilosa basi pilis longissimis rigidis tecta, apice pilis longioribus erectis, rigidissimis, apicem longitudine superantibus, cincta. Apex cornuum in medio horum pilorum obtusus nudus. Eminentia in fronte, infra cornua, inferius oblonga humilior, superius elevatior, subrotunda, postice parum depressa, inaequalis. Auricula ad latera capitis infra cornua pone illa posita. Collum erectum, compressum, longissimum, versus caput angustissimum, inferius latiusculum. Crura cylindrica anterioribus plus quam dimidio longioribus. Tuberculum crassum, durum in genuflexum. Ungues bisulci, unguati. Pili brevissimi universum corpus, caput, et pedes tegunt. Linea pilis rigidis longioribus

ty, but of its singularity, and, at the same time, to persuade travellers to use their own eyes, and not to view objects through the medium of other men's: It is necessary to caution them against such methodical arrangements, the authors of which lay reason aside, and believe themselves wise in proportion to their want of genius. Have we advanced a single step, after fatiguing ourselves with this enumeration of minute, equivocal, and useless characters? Do not the descriptions given by the antients and moderns, in the passages above quoted, convey a more distinct picture, and clearer ideas of this animal? Figures supply all such trifling characters; it is the province of history to mark those which are more important: A single glance of the eye upon a good figure conveys more information than descriptions

bus per dorsum a capite ad caudam extensa. Cauda teres, lumborum dimidia longitudine, non jubata. Color totius corporis, capitis, ac pedum ex maculis fuscis et ferrugineis variegatus. Maculae palmari latitudine, figura irregulari, in vivo animali ex lucidiori et obscuriore variantes. Magnitudo cameli minoris, longitudo totius a labio superiore ad finem dorsi spith. 24. Longitudo capitis spith. 4, colli spith. 9 ad 10, pedum anter. spith. 11 ad 13, poster. spith. 7 ad 8, longit. cornuum vix spithamalis. Spatium inter cornua spith. $\frac{1}{2}$, longit. pilorum in dorso poll. 3, latitud. capitis juxta tuberculum vel eminentiam spith. $\frac{1}{2}$, prope maxillam spith. 1, colli utrinque prope caput spith. 1, in medio spith. $1\frac{1}{2}$, ad basin spith. 2 ad 3, latitud. Lat. abd. antierius spith. 4, poster. spith. 6 ad 7. Crassities pellis aut corii cervi vulgaris. . . Descriptio antecedens juxta pellem animalis farsctam; animal vero nondum vidi; *Voyag. d'Hasselquist, Restock 1762.*

descriptions of this kind, which always become more obscure in proportion to their minuteness.

In the year 1764, a drawing of the giraffe, accompanied with some remarks, was sent to the academy of sciences, from which we learn, that this animal, which was thought to be peculiar to Æthiopia*, is likewise found in the neighbourhood of the Cape of Good Hope. The figure is so incorrect, that no use can be made of it; but, as the remarks contain a kind of description, they merit insertion: ' In an expedition, made in the year 1702, two hundred leagues to the north of the Cape of Good Hope, we found the camelopardalis, whose figure we have subjoined. The body resembles that of an ox, and the head and neck those of a horse. All those we met with were white with brown spots. It has two horns, and cloven feet: The two we killed, and whose skins have been transmitted to Europe, were of the following dimensions: The length of the head, one foot eight inches; the height, from the extremity of the fore foot to the withers, ten feet, and from the withers to the top of the head, seven feet, in all seventeen feet high. The length, from

* The giraffe is no where found but in Æthiopia. I saw two tame ones in the royal palace. I remarked, that, when they wanted to drink, they were obliged to spread the fore-legs very wide, otherwise, though their necks were long, they could not reach the water. What I relate, I saw with my eyes; *Relation de Thevenot, p. 10.*

‘ from the withers to the reins is five feet six inches, and from the reins to the tail, one foot six inches: Thus, the whole length of the body is seven feet. The height, from the hind feet to the reins, is eight feet six inches. From the disproportion in the height and length, it appears that this animal can be of little use. He feeds upon the leaves of trees; and, when he wants to drink, or to take any thing from the surface of the earth, he is obliged to bend down on his knees.’

In examining what travellers have said concerning the giraffe, I find they all agree, that this animal, when in its natural situation, can reach with its head from sixteen to seventeen feet high *; and that its fore-legs are twice as long as the hind legs; so that, when it sits on its crupper, it seems to be entirely on end †. They likewise

* Prosper Alpinus is the only author who gives a different idea of the magnitude of this animal, by comparing it to a small horse: ‘ Anno 1581, Alexandriae vidimus camelopardalem, quem Arabes zurnap et nostri giraffam appellant; haec equum parvum elegantissimumque representare videtur;’ p. 236. There is every reason to believe, that the giraffe seen by Prosper Alpinus was very young, and had by no means acquired its full growth. The same remark may be made with regard to the skin described by Hasselquist, which he says was of the size of a small camel.

† The fore feet of the giraffe are twice as long as those behind, which, by supporting a long straight slender body, raises the fore part of the animal to a prodigious height. Its head nearly resembles that of a stag, except that its blunt horns

likewise agree, that, on account of this disproportion, it cannot run quickly; that its dispositions are extremely mild; that, by this quality, as well as by other physical habits, and even by the form of the body, it approaches nearer to the nature of the camel than any other animal; and that it is one of the ruminating animals, and, like them, wants the cutting teeth in the upper jaw. We likewise learn, from the testimony of some voyagers, that this animal is found in the southern parts of Africa, as well as in those of Asia*.

From

horns exceed not half a foot in length. Its ears are long, like those of a cow, and it has no teeth in the upper jaw. Its hairs are round and fine, its limbs slender, resembling those of a stag, and its feet are like those of a bull. Its body is very slender, and the colour of its hair resembles that of the lynx. In manners and dispositions, it resembles the camel; *Voyage de Villamont*, p. 688.—I saw, at the castle of Cairo, two giraffes. Their neck was longer than that of the camel, and they had two horns, of half a foot in length, on the top of the head, and a small one on the front. The two fore legs were very long, and the hind ones remarkably short; *Cosmographie du Levant*, par Thevet, p. 142.

* In the island of Zanzibar, in the neighbourhood of Madagascar, there is a certain quadruped called *grasse* or *giraffe*, which has a neck about a fathom and a half in length, and its fore legs are much longer than those behind. Its head is small, and of different colours, as well as the body. This animal is very mild and tame, and never injures any person; *Descript. des Indes Orientales*, par Marc Paul, liv. 3. p. 116.—*Giraffa animal adeo sylvaticum ut raro videri possit. . . . homines videns in fugam fertur, tamen non sit multae velocitatis*; *Leon. Africa. Descript. Africa. tom. 2. p. 745.*

From what we have related, it is evident, that the giraffe is a peculiar species, and very different from all others. He seems, however, to make a nearer approach to the camel than to the stag or the ox. It is true the giraffe has two horns, and the camel has none: But the other resemblances are so numerous, that I am not surprised to see the appellation of *Indian camel* bestowed on him by some travellers. Besides, we know not the substance of which the horns of the giraffe are composed; and, consequently, we know not whether by this part he approaches nearer to the stag or the ox: They may, perhaps, be a substance very different from either. They may be composed of a congeries of hairs, like the horns of the rhinoceros; or they may be a substance of a peculiar texture. Nomenclators seem to have been first led into the blunder of ranking the giraffe with the stags, by the pretended passage of Belon, quoted by Gesner, which, if real, would be decisive of the point: They appear likewise to have misunderstood what has been mentioned by authors concerning the hair of these horns. They imagined that these writers had said, that the horns of the giraffe were clothed with hair, like the new sprung horns of the stag; and hence concluded that they were of the same nature. We see, on the contrary, from the notes above quoted, that the horns of the giraffe are only surrounded with hair, and have a tuft of large coarse hairs at the point,

point, and not clothed with a down or velvet, like those of the stag. From this circumstance, it is not improbable, that the horns of the giraffe are composed of a congeries of hairs nearly in the same manner as those of the rhinoceros: Their blunt or truncated points seem to favour this idea. Besides, if we consider that, in all animals which carry *wood* instead of horns, as the elk, the rain-deer, the stag, the roebuck, &c. this *wood* is always divided into branches or antlers, and that, on the contrary, the horns of the giraffe are simple, and consist but of one stem, we will be convinced that they are not of the same nature, unless analogy, in this instance, be entirely violated. The tubercle on the front, which appears to be a third horn, strengthens this opinion. The two horns, which are not pointed, but blunt at the extremities, are perhaps only tubercles of a greater length than the former. The females, according to the testimony of all travellers, have horns as well as the males, only they are somewhat smaller. If the giraffe really belonged to the deer-kind, analogy would again suffer violation; for, among all the animals of this kind, none of the females, except the female rain-deer, have horns, and we have given the reason of this phaenomenon. On the other hand, as the giraffe, on account of the excessive height of its limbs, cannot feed upon herbage, but with great difficulty; as its chief and almost only food consists of the leaves and

buds of trees, it may be presumed, that the substance of the horns, which are the most conspicuous residue of the organic particles derived from the food, is analogous to wood, like that of the stag. Time will confirm one or other of these conjectures. A single word more added to Hasselquist's minute description would have determined the genus of this animal. But school-boys, who have only their master's gamut in their heads, or rather in their pockets, must perpetually blunder, and make the most essential omissions ; because they renounce that spirit of research which ought to guide every observer, and see only through the false medium of arbitrary arrangements, which prevents them from reflecting on the nature and relations of the objects they meet with, and obliges them to describe upon a bad model. As every object differs materially from another, the whole should be treated in a different manner. A single character happily discovered, is more decisive, and conveys more knowledge of the subject than a thousand minute and trifling features ; for, in proportion to their number, they necessarily become equivocal and common, and, of course superfluous, if not hurtful to the real knowledge of Nature, who sports with the rules we prescribe to her, soars above all methodical distributions, and can only be perceived by the penetrating eye of genius.

SUPPLEMENT.

S U P P L E M E N T.

We here give the figure of the giraffe from a drawing transmitted to us from the Cape of Good Hope, which we have rectified in some points from the information of Mr Bruce. With regard to the horns of this animal, we are still uncertain whether they are permanent like those of the ox, antelope, goat, rhinoceros, &c. or whether they are annually renewed like those of the deer-kind. They seem to grow during the first years of the animal's life; but they never rise to a great height; for the longest which have been seen exceeded not twelve or thirteen inches; and they are generally not above six or eight inches. We are indebted to M. Allamand, a celebrated Professor at Leyden, for the exact knowledge we have obtained concerning these horns. The following is an extract of a letter he wrote on this subject to M. Daubenton, dated October 31. 1766.

‘ I have the honour to inform you, that I
‘ am in possession of a stuffed giraffe. Both
‘ you and M. de Buffon have expressed a desire
‘ to know the nature of its horns. I have cut
‘ off one of them, which I send you, that
‘ you may have a more exact idea of it. You
‘ will remark, that this giraffe was very young.
‘ The Governour of the Cape, from whom I re-
‘ ceived

ceived it, writes me, that it was killed when lying near its mother. Its height is about six feet, and its horns, of course, are short, not exceeding two inches and a half. They are every where covered with skin and hairs; and those at the point are much longer than the others, and form a pencil, the height of which exceeds that of the horn. The base of the horn is more than an inch broad, and consequently forms an obtuse cone. To discover whether it was hollow or solid, I sawed it through longitudinally, along with a portion of the skull to which it adhered. I found it to be solid, and a little spongy, because it had not yet acquired all its consistence. Such is its texture, that it appears not to be composed, like that of the rhinoceros, of hairs united together; and it resembles the horns of the stag more than those of any other animal. I would even say, that there is no difference between these two substances, if I were certain, that a horn, lately sent to me under that name, was really the horn of a giraffe. It is straight, half a foot long, and pretty much pointed. There still remain some vestiges of the skin with which it had been covered; and it differs from a stag's horn only in figure. If these observations are not sufficient, I shall with pleasure send you the two horns, that you may examine them along with M. de Buffon. With regard to this animal, I should farther remark, that

‘ that the alledged difference between its fore
‘ and hind legs seems to be greatly exaggera-
‘ ted; for it is hardly perceptible in my young
‘ giraffe.’

Beside these horns which are found on the head of the female giraffe, as well as on that of the male, there is, at almost an equal distance between the nostrils and eyes, a remarkable excrescence, which seems to be a bone covered with a soft skin, and garnished with smooth hair. This osseous excrescence is more than three inches long, and is much inclined toward the front, or makes a very acute angle with the bone of the nose. The colour of this animal's robe is a bright shining yellow, and the spots are, in general, rhomboidal.

It is extremely probable, from the inspection of these horns, which are solid, and resemble in substance the horns of the stag, that the giraffe may be ranked in the same genus: Of this there could not remain a doubt, if we were certain that he shed his horns annually. But it is now unquestionable that he ought to be separated from the ox-kind, and other animals whose horns are hollow. Meanwhile, we shall consider this large and beautiful animal as constituting a particular and solitary genus, which corresponds very well with the other facts in Nature, who, in voluminous species, never doubles her productions. The elephant, the rhinoceros, the hippopotamus, and perhaps the giraffe, are animals

mals forming particular genera, or solitary species, who have no collaterals. This is a privilege which seems to be conferred solely on animals which greatly surpass all others in magnitude.

In a letter I received from Holland, the subscription of which was illegible, I had the following description of a giraffe.

Africa produces no animal more beautiful or more curious than the giraffe. From the point of the nose to the tail, he is twenty-five feet long. He has received the name of *Camelopard*, because he somewhat resembles the camel in the figure of his head, the length of his neck, &c. and because his robe is variegated with irregular spots, like that of the leopard. He is found at twenty-four leagues from the Cape of Good Hope, and is still more frequent at greater distances. The teeth of this animal are similar to those of the stag. His horns are a foot long: They are straight as a man's arm, garnished with hair, and seem to be truncated at their extremities. The neck constitutes at least one half of the length of the animal, which, in figure, pretty much resembles that of a horse. The tail would also be pretty similar, if it were equally furnished with hair as that of the horse. The legs are like those of the stag; the feet are garnished with very black, obtuse, and widely separated hoofs. When the animal leaps, he first raises

the

the two fore feet, and then those behind, as a horse would do who had his two fore feet tied together. He runs slowly, and with a bad grace: He may be easily overtaken in the chace. He carries his head always high, and feeds only on the leaves of trees, being unable to pasture on the ground, on account of his great height. When he drinks, he is obliged to rest on his knees. The females are generally of a bright yellow colour, and the males of a brownish yellow. Some of them are nearly white, with brown or black spots.

Supplement from Schneider's Edition.

M. de Buffon, with much propriety, blames our modern nomenclators, because, when treating of the giraffe, they are silent with regard to the nature of his horns, which alone can form a criterion to ascertain the species to which he belongs; and because they give dry and minute descriptions, without adding a figure. We shall endeavour to supply both these defects.

M. Allamand, professor of natural history in the university of Leyden, is in possession of the stuffed skin of a young giraffe. He obligingly communicated to us a drawing of it, which we caused to be engraven; and he added the following description,

M,

‘ M. Tulbagh, Governor of the Cape of Good
‘ Hope, who has enriched our academical ca-
‘ binet with many rare productions of nature,
‘ writes me, that the young giraffe in our pos-
‘ session was killed by his hunters at a conside-
‘ rable distance from the Cape, when lying near
‘ its mother, whom it still sucked. Hence it
‘ appears, that the giraffe is not peculiar to Æthi-
‘ opia, as Thevenot has alledged.

‘ As soon as I received it, I examined the
‘ horns, with a view to elucidate M. de Buffon’s
‘ doubt with regard to their substance. They
‘ are not hollow like those of oxen and goats,
‘ but solid, and nearly of an uniform texture,
‘ like those of the stags, from which they differ
‘ only in being thinner, straighter, and not di-
‘ vided into branches, or antlers. They are
‘ totally covered with the skin of the animal;
‘ and, for three fourths of their length, this skin
‘ is furnished with short hair, similar to that
‘ which covers the body. Toward the points,
‘ the hair becomes longer, rises about three
‘ inches above the blunt end of the horns, and is
‘ of a black colour. Hence it is very different
‘ from the down on the young horns of the
‘ stag.

‘ These horns appear not to be composed of
‘ united hairs, like those of the rhinoceros.
‘ Their texture is likewise totally different.
‘ When sawn through longitudinally, we per-
‘ ceive that they consist of a hard plate, which
‘ constitutes

constitutes their external surface, and incloses a spongy substance. This, at least, is the case with the horns of my young giraffe. Perhaps the horns of adults are more solid. M. de Buffon is now in a condition to determine this point; for, along with the horns of my giraffe, I sent him another belonging to one more advanced in years, which a friend of mine received from the East Indies.

Though these horns are solid, like those of the stag, I suspect that the animal does not shed them annually. They seem to be an excrescence of the frontal bone, like the bone which serves as a nucleus to the hollow horns of oxen and goats; and, consequently, it is impossible that they can fall off. If this conjecture be well founded, the giraffe constitutes a particular genus, perfectly distinct from the animals who shed their horns, and also from those who have hollow, but permanent horns.

In the middle of the front of adult giraffes, there is a protuberance which seems to be the rudiments of a third horn. No such protuberance appeared in our giraffe; probably because it was too young.

All the authors, both antient and modern, who describe this animal, tell us, that the fore legs are twice as long as the hind ones. They could not possibly be deceived concerning a character so striking. But I can affirm, that, in this article, the giraffe must change greatly

‘ in growing; for, in our young one, the hind
‘ legs were equally long with those before.
‘ This circumstance, however, prevents not the
‘ anterior part of the giraffe from being higher
‘ than the posterior, which is owing to the dif-
‘ ference in the thickness of the body, as may
‘ be seen in the figure. “ But this difference is
‘ by no means so great as has been represented.

‘ The neck of the giraffe is the first thing
‘ which strikes a spectator. It is longer than
‘ that of any other quadruped, not excepting
‘ the camel, who, besides, folds his neck in dif-
‘ ferent ways, which the giraffe seems to be in-
‘ capable of performing.

‘ His colour is a dirty white, interspersed
‘ with yellowish spots, very near each other on
‘ the neck, more distant on the rest of the body,
‘ and of a figure which approaches to a paral-
‘ lelogram or rhomb.

‘ The tail is slender, in proportion to the
‘ length and stature of the animal. Its extre-
‘ mity is garnished with a tuft of black hairs,
‘ which are seven or eight inches long.

‘ The mane is composed of reddish hair,
‘ three inches long, and inclined toward the
‘ hind part of the body. It extends from the
‘ head along the neck, and down to the middle
‘ of the back; and, at the distance of some
‘ inches, it is again continued; but the hair in-
‘ clines toward the head. It seems to recom-
‘ mence near the origin, and to extend to the
‘ extremity

‘ extremity of the tail : But the hairs are short,
‘ and scarcely to be distinguished from those
‘ which cover the rest of the body.

‘ The eye-lids, both superior and inferior,
‘ are garnished with a range of very stiff hairs.
‘ There are similar hairs, but thinly scattered,
‘ round the mouth.

‘ The aspect of the giraffe indicates a mild
‘ and docile animal ; and this is the character
‘ given of him by those who have seen him
‘ alive.

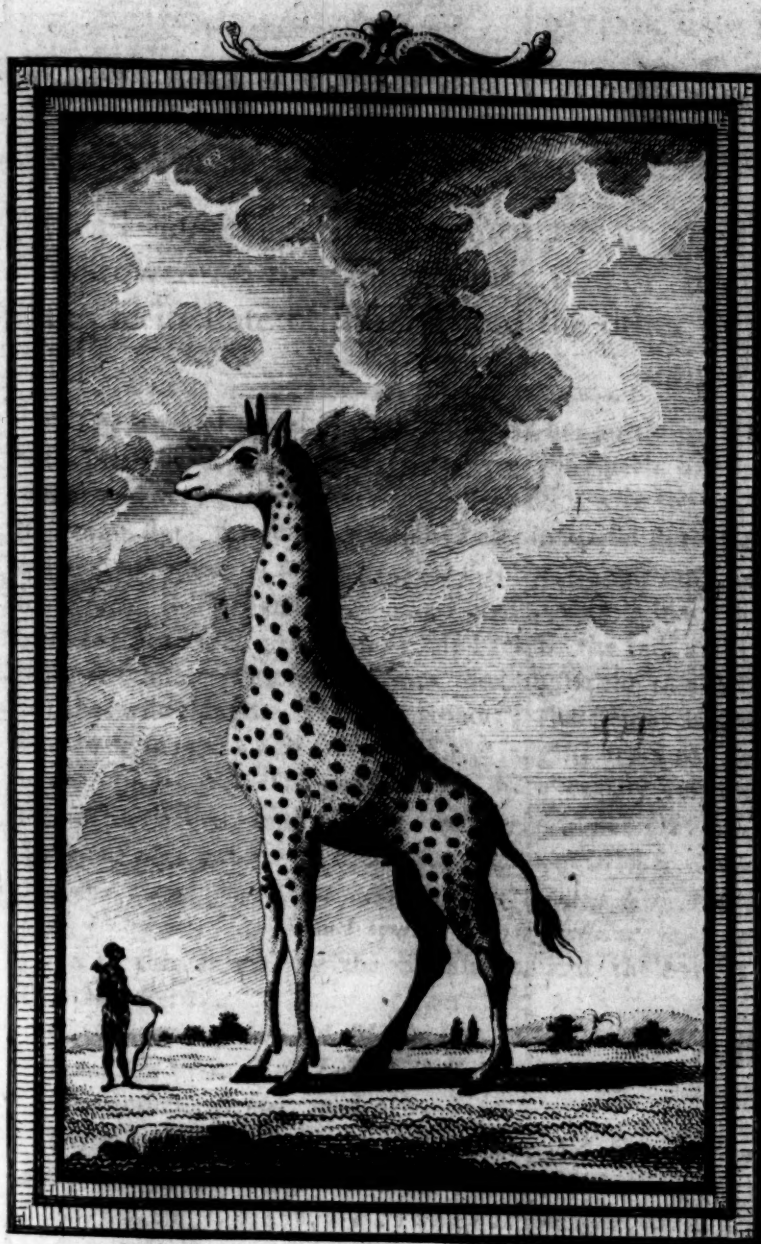
‘ This description of the giraffe, added to
‘ what M. de Buffon has collected from different
‘ authors, and accompanied with the figure,
‘ is sufficient to give us more exact ideas
‘ concerning this animal than we had hitherto
‘ obtained.’

M. Alamand’s great knowledge and accuracy, in every subject of which he treats, are apparent from the above description. I would have copied his engraving, if his giraffe had not been too young. The figure I have given is that of an adult. I shall only remark, that I suspect the longest of the horns he was so obliging as to send me, does not belong to a giraffe. ‘The short ones are very thick, while it is very thin, in proportion to their respective lengths. In the anonymous description above related, it is said, that the horns of the adult giraffes are *a foot in length, and as thick as a man’s arm*. If the horn under consideration, which is half a foot long,
really

really belonged to a giraffe, it ought to be double its present thickness. Besides, this pretended horn of a giraffe is so similar to the first horns of a young stag, that it may be regarded as belonging to the latter animal.

As to the nature of the giraffe's horns, I am inclined to adopt M. Alamand's opinion. The protuberance on the front, which is unquestionably osseous, makes a kind of third horn. The horns adhered to the cranium, without the support of moulds; and, consequently, ought to be considered as osseous prolongations of the bones of the head. The hair which surrounds and overtops them has no resemblance to that which covers the young shoots of the stag, or fallow deer. This hair seems to be permanent, as well as the skin from which it issues. Hence the horn of the giraffe is a bone, and differs from that of the ox by its covering, the latter being surrounded with a horny substance, or hollow horn, and the former with hair and skin.

The



A. Bell Sculp.

GIRAFFE

1871



1871

The LAMA * and the PACOS **.

IN all languages, two names are frequently bestowed on the same animal, one of which relates to its state of liberty, and the other to its domestic

* The lama, or camel of Chili and Peru, has an almost even back, small head, fine black eyes, and very long neck, bending much, and very protuberant near the junction with the body. In a tame state, it has smooth short hair; in a wild state, long coarse hair, which is white, gray, and russet, disposed in spots. According to Hernandez, it is yellowish, with a black line from the head along the top of the back to the tail, and the belly is white. The spotted may possibly be the tame; the last the wild lamas. The tail is short; the height is from four to four and a half feet; and the length, from the neck to the tail, six feet. In general, the shape exactly resembles that of the camel, only it wants the dorsal bunch; Pennant's *Synops. of quad.* p. 64.

Lama, lhama, glama, huanacus, guanaco, cornera de tierra, guanapo, wianaque, pelon ichiatl oquitli, hueque chillehueque, names given to this animal by the Spaniards, and the natives of Chili and Peru.

Ovis Peruana; *Hernand. Mex.* p. 660. *Marcgr. Brasil.* p. 243.

Huanuca-lhama; *de Laët*, p. 328.

Ovis Indica; *Gesner, quad.* p. 149.

Llama; *Church. collect.* p. 44. *Guanoco*; *ibid.* Cieza's travels, p. 232. *Frezier's voyages*, p. 154. *Feuillée, Obs. Peru*, p. 23. *Ulloa's voy.* vol. 1. p. 478. *Wood's voyage in Dampier*, vol. 4. p. 95.

Camelus glama, corpore laevi, topho pectorali; *Linn. Syst. Nat.* p. 91.

Camelus Peruvianus, glama dictus; *Raii Synops. quad.* p. 145.

Camelus pilis brevissimis vestitus; camelus Peruanus; le chameau de Perou; *Brissou, quad.* p. 34.

Camelus spurius; *Klein, quad.* p. 42.

The

domestic state. The wild boar and hog are the same animal, and these two names have no relation to any difference in the nature of the creatures, but to the condition of the species, one part of which is under the dominion of man, and the other independent. The same remark applies to the lamas and pacos, which were the only domestic animals* of the antient Americans: These names were appropriated to the animals in their domestic condition. The wild lama was called *huanacus* or *guanaco*, and the wild pacos, *vicuna*, or *vigogne*. I thought this remark necessary to prevent confusion. These animals

** The body of the pacos is covered with long and very fine wool, of the colour of dried roses, or a dull purple. The belly is white: In a tame state, the colour varies. It is shaped like the former, but much less. The leg of one I saw was about the size of that of the buck; *Pennant's Synops. of quad.* p. 66.

Pacos; *Hernandez*, p. 663.

Paco, vicuna; *De Laët*, p. 328. *Gieze*, p. 233.

Ovis Chilensis; *Marcgrav.* p. 244. *Wood's voyage*, *Dampier*, vol. 4. p. 95. *Narborough's voyage*, p. 32.

Alpague, vicuna; *Frezier's voyage*, p. 153. *Ulloa's voyage*, vol. 1. p. 479.

Camelus seu camelo congener Peruvianum lanigerum, *Pacos dictum*; *Raii synops. quad.* p. 147.

Camelus laniger; *Klein, quad.* p. 42.

Camelus pilis prolixis toto corpore vestitus; *Le Vigogne*; *Briffon, quad.* p. 35.

Camelus pacos, tophis nullis, corpore lanato; *Linn. Syst. Nat.* p. 91.

* Before the arrival of the Spaniards, the Indians of Peru had no domestic animals but the pacos and the huanacus; *Hist. des Incas*, p. 265.

animals are peculiar to the New World: They even love particular lands, beyond which they are never found. They appear to be confined to that chain of mountains which extends from New Spain to Terra Magellanica. They inhabit the most elevated regions of this globe, and seem to require a lighter air than that of our highest mountains.

It is singular, that, though the lama and pacos are domestic in Peru, Mexico, and Chili, as the horse is in Europe, or the camel in Arabia, we have hardly any knowledge of them; and that, though the Spaniards have had the dominion of these vast countries for more than two centuries, none of their authors have given a complete history and exact description of these animals. It is alledged, indeed, that they cannot be transported into Europe, nor even descend from their mountains, without perishing in a short time. But, in Quito, Lima, and other towns, where men of letters reside, these animals might be drawn, described, and dissected. Herrera* says very little concerning them; and Garcilasso† only

* In the mountains of Peru there is a species of camel, the wool of which is manufactured into cloth; *Descript. des Indes Occidentales, par Herrera, p. 244.*

† P. Blas Vallera remarks, that the cattle of Peru are so mild, that children use them as they please. There is a large and a smaller kind. The tamed huanacus (*lamas*) are of different colours, and the wild kind are all of a bay brown. These animals are about the height of a stag, and resemble the camel, only they want the bunch, and their neck is long
and

only copies what had been mentioned by other writers. Acosta and Gregoire de Bolivar have collected the greatest number of facts regarding the natural dispositions of the lamas, and the utility derived from them. But we know nothing of their internal structure, and of their time of gestation: We know not whether the lama and pacos be two distinct species, or whether they intermix together. These, and many other facts necessary to complete their history, are still objects of inquiry.

Though they are said to perish when removed from their native country, it is certain, that, after the conquest of Peru, some lamas were transported to Europe. The animal mentioned by Gesner, under the name of *Allocamelus*, and of which he gives a figure, is a lama, that was brought alive from Peru to Holland in the year 1558 *. It is the same with that mentioned by Matthio-

and smooth. . . . The cattle called *paco-lamas* (*pacos*) are not nearly so much esteemed. . . . The pacos are smaller than the lamas, and resemble the wild vicunas. They are very delicate and slender; and their wool, though the quantity of it be small, is extremely fine. Acosta remarks, that this animal, as well as several others, is variously employed as a medicine by the natives; *Hist. des Incas*, tom. 2. p. 260.

* *Allocamelus* Scaligeri apparet esse hoc ipsum animal cujus figuram proponimus ex charta quadam typis impressa mutuati cum hac descriptione. Anno Domini 1558, Junii die 19. animal hoc mirabile Mittelburgum Selandiae advectum est, antehac a Principibus Germaniae nunquam visum, nec a Plinio aut antiquis aliis scriptoribus commemoratum. Ovem Indicam esse dicebant e Piro (*forte Peru*) regione, sexies mille milliariibus

Matthiolus *, under the denomination of *Elaphocamelus*, and which he has pretty accurately described. The pacos, and perhaps also the lama, have several times been brought to Spain, with a view to naturalize them †. We ought, therefore, to be better informed concerning these animals, which might be rendered extremely useful to us; for, it is probable, that they would

VOL. VII. S thrive

milliaribus fere Antverpio distante. Altitudo ejus erat pedum sex, longitudo quinque; collum cigneo colore candidissimum. Corpus (*reliquum*) rufum vel puniceum. Pedes ceu struthocameli, cujus instar urinam quoque retro reddit hoc animal (erat autem mas annorum aetatis quatuor); *Gesner. hist. quad. p. 149. et 150.*

* Longitudo totius corporis a cervice ad caudam 6 pedum erat; altitudo a dorso ad pedis plantam 4 tantum. Capite, collo, ore, superioris praesertim labii scissura ac genitali, camelum fere refert; at caput oblongius est; aures habet cervinas, oculos bubulos, quin etiam ut ille anterioribus dentibus in superiore maxilla caret, sed molares utrinque habet; ruminat, dorso est sensim prominente, scapulis prope collum depresso, lateribus tumidis, ventre lato, clunibus altioribus, et cauda brevi spithamae fere longitudine; quibus omnibus cervum fere refert, quemadmodum etiam cruribus praesertim posterioribus; pedes illi bifurci sunt, diducta anteriori parte divisura. Ungues habet acuminatos qui circa pedis abutim in cutem crassam abeunt, nam pedis planta, non ungue sed cute, ut in multifidis et ipso camelo, contegitur; retroramingit hoc animal ut camelus, et testes substrictos habet; pectore est amplo, sub quo, ubi thorax ventri connectitur, extuberat globus ut in camelo, vomicae similis, e quo nescio quid excrementi sensim manare videtur; *P. And. Matthioli, Epist. lib. v.*

† The King of Spain ordered pacos to be brought to Spain, in order to propagate and naturalize them. But they were all killed by the climate; *Hist. des aventur. Flibust. par Oexmelin, tom. 2. p. 367.*

thrive on our Alps* and Pyrennees, as well as on the Cordelieres.

Peru, according to Gregoire de Bolivar, is the native country of the lamas: They have, indeed, been brought into other provinces, as New Spain, where, however, they are regarded more as objects of curiosity than of utility. But, through the whole extent of Peru, from Potosi to Caracas, these animals are extremely numerous. They constitute the sole wealth of the Indians, and contribute not a little to that of the Spaniards. The flesh of the lamas is good eating; their wool is excellent; and their whole lives are spent in transporting the commodities of the country. Their common load is a hundred and fifty pounds, and the strongest of them carry two hundred. They travel pretty long journies in a country impassable to all other animals. They march slowly, and seldom accomplish more than four or five leagues a day. Their gait is grave and firm. They descend precipitous ravins, and climb steep rocks, where even man himself dares not accompany them. They walk commonly four or five days on end, after which they wish to repose; and they spontaneously rest twenty-four or thirty hours before they resume their march. They are much employed in transporting the rich ores dug out of the mines of Potosi. Bolivar remarks, that, in his time,

three

* No animal walks so securely upon rocks as the lama; because he adheres by means of a kind of spur on his feet; *Voyag. de Coreal*, tom. 1. p. 352.

three hundred thousand of these animals were constantly occupied in this work.

Their growth is quick, and their life is not of long duration. At the age of three years, they are in a condition of producing, continue in full vigour till twelve, when they begin to decay; and, at fifteen, they are entirely useless. Their natural disposition seems to be modelled upon that of the Americans. They are mild and phlegmatic, and perform every thing by weight and measure. When they incline to rest a few minutes in their journey, they bend their knees, and lower their bodies with the greatest precaution, to prevent their load from falling, or being deranged; and, whenever they hear their conductor's whistle, they rise with the same precaution, and proceed on their journey. In going along, they browse wherever they find herbage; but they never eat in the night, even though they have been sparingly fed during the day; for this time is spent in chewing their cud. When they sleep or ruminate, they rest on their breast, with their legs folded under their belly. When fatigued with travelling, if they once sink down under the load, no blows can force them to rise. The last resource is to squeeze their testicles; but even that is often ineffectual. They remain obstinately where they lie; and, if their master continues to abuse them, they despair and kill themselves, by alternately striking their heads from right to left upon the ground. They neither defend themselves

themselves with their feet nor their teeth, and they may be said to have no other arms but those of indignation. They spit in the face of those who insult them; and, it is alledged, that the saliva which they throw out when enraged, is so acrid as to raise blisters on the skin.

The lama is about four feet high, and his body, including the neck and head, is five or six feet in length. This animal has a well shaped head, large eyes, a pretty long muzzle, and thick lips, the superior one being divided, and the inferior somewhat pendulous. He has neither cutting nor canine teeth in the upper jaw. His ears are four inches long, which he carries forward, erect, and moves at pleasure. The length of his tail, which is straight, slender, and a little raised, exceeds not eight inches. His feet are cloven, like those of the ox; but they are armed behind with a spur, which assists the animal in supporting itself upon rugged and difficult ground. The wool upon his back, crupper, and tail, is short, but very long upon the flank and belly. The lamas vary in colour; some of them are white, others black, and others of a mixed colour*. Their dung resembles that of the goat.

The

* The head of the lama is proportionally small, and has some resemblance to that of the goat and sheep. The upper lip is divided like that of the hare: Through this aperture they spit, to the distance of ten paces, upon those who disturb them; and, if the saliva falls upon the face, it inflames or blisters the skin. They have a long neck, which bends downward

The penis of the male is slender and crooked in such a manner that he discharges his urine backward. The lamas are extremely lascivious, and yet they copulate with much difficulty. The aperture of the female is very small. She prostrates herself to receive the male, and invites him with her sighs. But several hours, and sometimes a whole day passes, before they can accomplish their purpose: All this time is spent in groaning, grumbling, and particularly in conspirating each other: As these tedious preludes

are

downward where it springs from the body, like that of the camel, to which they would have a considerable resemblance, if they had a bunch on the back. Their height is about four feet and a half. They walk with their head erect, and with a pace so uniform, that even blows are incapable of making them move more quickly. They will not carry their loads during the night; but are obliged to be unloaded, in order to allow them to pasture. They eat little, and are never furnished with drink. Like the sheep, they have cloven feet, and a spur above, which renders them sure-footed among the rocks. Their wool has a strong odour: It is long, spotted with white, gray, and red, and equally beautiful, though of an inferior quality, with that of the pacos; *Voyage de Frezier, p. 138.*

* Salacissimum hoc esse animal id mihi conjecturam facit, quod cum sui generis femellis sit destitutum, magna cum prurigine capris se commisceat, non tamen erectis ut alias caprae hirco ascendente, solent sed humi ventre accubantibus, ita cogente animali anterioribus cruribus. Itaque super ascendens coit, non autem averfis clunibus. Adeo venere, vernali autumnalique tempore, stimulat hoc animal ut illud viderim humile quoddam praeseptum avena refertum conscendisse, genitalique illi magno cum murmure tamdiu confricasse, quo usque semen redderet, plurimis una hora replicatis vicibus. Non tamen concepere caprae hujusce animalis femine refertae; *Matthiol. Epist. lib. 5.*

are more fatiguing than the operation itself, their keeper abridges their labour, and aids their arrangement with his hand. They seldom produce more than one at a time. The mother has only two teats, and the young one follows her the moment after it is brought forth. The flesh of the young ones is very good; but, when old, it is dry and hard. The flesh of the domestic is better than that of the wild lamas, and their wool is likewise much softer. Their skin is very compact: The Indians make shoes of it, and the Spaniards use it for harnesses. The food of these animals, which are so useful in the country that produces them, costs almost nothing. As they are cloven-footed, they require no shoes; and the thick wool with which they are covered, renders saddles unnecessary. They have no need of corn or hay; green herbage, of which they take but small quantities *, being sufficient

* The skin of the huanacus is hard: The Indians soften it with grease, and use it for soles to their shoes. But as this leather is not curried, it is soon wasted by the rain: The Spaniards make fine harnesses to their horses of the lama's hide: They employ these animals, as the Indians do, in transporting their merchandise. Their common route is from Cozer to Potosi, which is about two hundred leagues, and their daily journey seldom exceeds three leagues; for they walk slowly, and, if pushed beyond their ordinary pace, they lie down, and it is impossible to raise them, even when the load is taken off their backs; so that they often die on the spot. . . . When transporting goods, they go in troops, and forty or fifty of them are always left unloaded, in order instantly to relieve those which begin to be fatigued. The flesh
of

sufficient for their nourishment. In drinking, they are still more moderate. They quench their thirst with their saliva, which, in this animal, is more abundant than in any other.

The huanacus, or lamas in a state of nature, are stronger, more active, and nimbler than the domestic kind. They run like the stag, and, like the wild goat, they climb the steepest rocks. Though in full possession of liberty, they assemble in flocks, sometimes to the number of two or three hundred. When they perceive any person, they look at him with astonishment, discovering neither fear nor pleasure; They then blow through their nostrils, neigh nearly like a horse, and fly off together to the tops of the mountains. They prefer the north side and the cold regions of the hills. They often climb and sojourn

of this animal is excellent; for it is both well tasted and wholesome, especially that of the young ones, who exceed not four or five months old.... Though these animals are very numerous, their food costs almost nothing; for, after their journey, they are unloaded, and allowed to pasture in the fields. It is unnecessary to shoe or saddle them; for they are cloven footed; and their wool prevents them from being incommoded by their load, which their masters take care not to place on their back-bone, otherwise it would kill them. The conductors of these animals never enter the towns, but sleep in tents, that their cattle may have an opportunity of pasturing during the night. They take four months in performing a journey from Cozer to Potosi, two in going, and as much in returning. At Cozer, the best lamas sell at eighteen ducats a piece, and the common sort at twelve or thirteen. The flesh of the wild huanacus is good, but inferior to that of the domestic kind; *Hist. des Incas, tom. 2, p. 260.*

sojourn above the line of the snow. When travelling on ice and covered with hoar-frost, they are in better plight than in a temperate climate. In the Sierras, which are the most elevated part of the Cordelieres, they are much more numerous, and have more strength and vigour than in the Lanos, which are lower. These wild lamas are hunted for the sake of their fleeces. It is difficult for the dogs to follow them; and, if allowed time to gain the rocks, both the hunters and dogs are obliged to abandon them. They seem to be as much afraid of the weight of the air as of heat; for they are never found in low lands: And, as the chain of the Cordelieres, which is more than three thousand fathoms above the level of the sea at Peru, preserves nearly the same elevation from Chili to the straits of Magellan, the huanacus or wild lamas are very numerous throughout all that extent *. But, on the coast of New Spain, where these mountains sink considerably lower, no lamas are to be found, except

* In the neighbourhood of Port Desire, at some distance from the Straits of Magellan, we found a number of those wild sheep which the Spaniards call *Winaques*. . . . Though very alert and timid, we killed seven of them during our stay; and their wool seems to be much finer than that of any other animal. . . . They go in flocks of five or seven hundred; and, as soon as they perceive any person, they snort with their noses, and neigh like horses; *Wood's Voyage, in Dampier, vol. 4. p. 95.*—We saw, at Tucuman, a province adjacent to Peru, large sheep, which were used as beasts of burden, and whose wool was as fine as silk; *Travels of Woods Rogers, tom. 2. p. 65.*

except the domestic kind which are brought thither.

The pacos are a species which may supply that of the lamas, as the asfs might supply the place of the horse. They are smaller, and less proper for labour; but their fleeces are more useful. The long wool with which they are covered, is an article of luxury, as good and as precious as silk. The pacos, which are also called *alpaques*, when in a domestic state, are often totally black, and sometimes of a brown colour mixed with yellow. The wild pacos have the colour of dried roses; and this natural colour is so fixed, that it suffers no change from the hand of the workman. Their wool makes excellent gloves, stockings, bed-clothes, and carpets. This commodity alone constitutes a valuable branch of commerce to the Spaniards. The beaver of Canada, the Calmuck sheep, and the Syrian goat, furnish not a finer hair: That of the pacos is as dear as silk. This animal possesses many things in common with the lama. It belongs exclusively to the same country; for it exists nowhere but on the Cordelieres. It has likewise the same dispositions, and nearly the same manners and temperament. As its wool, however, is longer and more bushy, it seems to be still less afraid of cold. It dwells more freely among the snows and ice of cold countries, and is extremely numerous in Terra Magellanica *.

VOL. VII.

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The

* On the east coast of Patagonia, near the river Plata, the
vigognes

The pacos also resemble the lama in figure; but they are smaller, their legs are shorter, and their muzzle is more contracted. Their wool is of the colour of dried roses. They have no horns. They live and pasture on the most elevated parts of the mountains. Snow and ice seem rather to refresh than incommode them. They go in flocks, and run nimbly. They are very timid; and, when they perceive any person, they fly off, driving their young before them. The hunting of the pacos was rigorously prohibited by the antient kings of Peru, because these animals do not multiply fast. At present, they are much less numerous than at the time the Spaniards first took possession of that country. Their flesh is not so good as that of the huanacus; and they are sought after solely for the sake of their wool, and the bezoars which they produce. The manner of taking them shows their timidity, or perhaps their weakness. Several people assemble to chase these animals in some narrow defile, across which cords are stretched to the height of three or four feet, with pieces of linen or woollen cloth fixed upon them. When the pacos arrive, the motion of the pieces of cloth, produced by the wind, so terrifies them, that they dare not pass, but collect in large groups, which

vigognes are very numerous. But these animals are so timid and fleet, that it is very difficult to seize them; *Anson's Voyage*.—The most common quadrupeds in Port St Julian, in Terra Magellanica, are the guanacos; *Hist. du Paraguai, par Charlevoix, tom. 6. p. 207.*

which makes it an easy business to kill vast numbers of them. But, if there happen to be any huanacus in the flock, as they are taller and less timid than the pacos, they spring over the cords; and, when the example is once set, the pacos likewise leap and escape from the hunters *.

With regard to the domestic pacos, they are employed, like the lamas, in carrying burdens; but they cannot bear as much weight even in proportion to their size. They are still more subject to capricious obstinacy. When once they lie down with their load, rather than rise, they will suffer themselves to be cut in pieces. The Indians make no use of the milk of these animals; because they never yield more than is necessary to suckle their young. The great profits derived from their wool induced the Spaniards to endeavour to naturalize the pacos in Europe. They were transported into Spain; but the climate destroyed them †. I am persuaded, however, as I formerly remarked, that these animals might succeed in our mountains, and particularly in the Pyrennees. Those who brought them to Spain did not consider that, even in Peru, they subsist only in the cold region, or upon the tops of the highest mountains; that they are never found in low lands; that they die in warm countries; that, on the contrary, they

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* Voyage de Frezier, p. 138.

† Hist. des aventures des Flibustiers, p. 367.

are at present very numerous in the neighbourhood of the straits of Magellan, where the cold is much more intense than in the south of Europe; and, consequently, that, in order to preserve them, they should be landed, not in Spain, but in Scotland, or even in Norway. The foot of the Pyrennees, Alps, &c. would probably answer the intention still better, where they could climb to the region which was most agreeable to their constitution. I have dwelt the longer on this subject, because I imagine that these animals would be a great acquisition to Europe, and would be productive of more real advantage than all the metals of the New World, which only load us with an useless weight *, since a grain of gold or silver was formerly equal in value to what now costs us an ounce of these metals.

Animals which feed upon herbs and inhabit the high mountains of Asia and Africa, produce what are called the *oriental bezoars*, whose virtues are so much extolled. Those of the European mountains, where the qualities of the plants are more temperate, produce only useless balls called *aegagropili*; and, in South America, all the animals that inhabit the mountains of the Torrid*Zone, furnish what are denominated *occidental bezoars*, which are still more solid, and have,

* What advantage have we derived from the rich mines of Peru? To procure these metals, millions of men have perished in the bowels of the earth, and their blood and labours have answered no other purpose, than to load us with an unnecessary weight.

have, perhaps, higher virtues than the *oriental*. The *vigogne*, or wild pacos, produces a great number, as well as the *huanacus*. These stones are likewise produced by the stags and roebucks on the mountains of New Spain. The lamas and pacos produce no fine bezoars, unless when in their natural wild state. The domestic kind afford only small, black bezoars, without any virtue. The best stones are of a dark green colour, and generally proceed from the wild pacos, particularly those which inhabit the highest parts of the mountains, and commonly pasture among the snows. Of these mountain pacos, both the males and females produce bezoars. They hold the first rank after the oriental bezoars, and are in much higher estimation than those of New Spain, which proceed from stags, and are less efficacious than any of the other kinds.

The

THE TWO-TOED * and THREE-TOED SLOTHS **.

THESE two animals have been denominated *Sloths*, on account of the slowness of their movements, and the difficulty with which they walk. Though they resemble each other in many respects, they differ, both externally and internally, by characters so marked, that it is impossible

* The sloths have no cutting teeth in either jaw; but they have canine teeth and grinders. The fore legs are much longer than the hind, and the claws are long.—The two-toed sloth has a round head, short projecting nose, ears like the human, lying flat on the head, two long claws on the fore feet, and three on the hind. The hair on the body is long and rough; in some parts curled and woolly, in some, of a pale red above, cinereous below; and in others, of a yellowish white below, and a cinereous brown above. The length of that in the British museum, is eleven inches; I believe it is a young one: It has no tail; *Pennant's Synops. of quad.* p. 321.

Unau, the name of this animal in Maragnon. P. d'Abbeville says, that there are two kinds, the one about the size of a hare, and the other about twice as large; *Mission au Maragnon*, p. 252.

Tardigradus Ceilonicus catulus; *Seba*, tom. 1. p. 54. tab. 33. fig. 4.—*Tardigradus Ceilonicus foemina*; *Id. ib.* tab. 34.

Tardigradus pedibus anticis didactylis; *posticis tridactylis*; *Le Pareilleux de Ceilan*; *Brisson. quad.* p. 22.

Bradypus didactylis, *manibus didactylis*, *cauda nulla*; *Linn. syst. nat.* p. 51.

** The

impossible not to recognise them as very distinct species. The unau, or two-toed sloth, has no tail, and only two claws on the fore-feet. The ai, or three-toed sloth, has a tail, and three claws on all the feet. The muzzle of the former is longer, the front more elevated, and the ears more apparent than those of the latter. Their hair is also very different. The structure and

** The three-toed sloth has a blunt black nose, a little lengthened, very small external ears, and eyes small, black, and heavy. From the corner of each eye, there is a dusky line. The colour of the face and throat is a dirty white. The hair on the limbs and body is long, very uneven, and of a cinereous brown colour. The tail is short, being a mere stump. The legs are thick, long, and awkwardly placed. The face is naked. There are three toes, and three very long claws on each foot. The length of that in the British museum is twelve inches; but it grows to the size of a middle sized fox; *Pennant's synops. of quad. p. 319.*

Ai, the Brazilian name of this animal, taken from its plaintive cry *a, i*, which it often repeats; *Hay*, according to Lery; and *Hau* or *Hawhi*, according to Thevet. The *Perilla ligera* of Oviedo, and the *Haut* of Nieremberg.

Arctopithecus; *Gesner. quad. p. 869. Icon quad. p. 96.*

Ignavus; *Clus. Exot. p. 110. 372.*

Sloth; *Raii synops. quad. p. 245. Edwards Gleanings, pt. 310.*

Ignavus Americanus, risum fletu miscens; *Klein. quad. p.*

43.

Tardigradus pedibus anticis et posticis tridactylis; *Briffon. quad. p. 21.*

Ai, seu *tardigradus gracilis Americanus*; *Seba, tom. 1. p. 53. tab. 33. fig. 2.*

Ouaikare, Paresseux; *Barrère hist. Fr. Equinox. p. 154.*

Bradypus tridactylus, pedibus tridactylis, cauda brevi; *Linn. syst. nat. p. 50.*

Bigritia sive *Haut*; *Nieremb. p. 163.*

Ai, sive *ignavus*; *Marcgr. hist. nat. Brasil. p. 221.*

and situation of some parts of their viscera are likewise different. But the most remarkable distinction is derived from this singular circumstance, that the unau has forty-six ribs, and the ai only twenty-eight, which shows them to be species very remote from each other. This number of ribs, in the body of an animal so short, is an excess or error of Nature; for no animal, however large, has such a number of ribs: The elephant has only forty, the horse thirty-six, the badger thirty, the dog twenty-six, man twenty-four, &c. This difference in the structure of the floths indicates a greater distance between these two species than between the dog and cat, who have both the same number of ribs; for external differences are nothing when compared to those which are internal: The former may be regarded as causes, and the latter as effects only. The interior frame of animated beings is the foundation of Nature's plan; it is the constituent form, and the origin of all figure: But the external parts are only the surface or drapery. How often have we not found, in the course of our comparative examination of animals, that a very different external appearance covered internal parts perfectly similar; and that, on the contrary, the slightest internal distinction produced great external differences, and changed the natural dispositions, powers, and qualities of the animal? How many animals are armed, covered, and adorned with ex-
crescent

THREE-TOED SLOTHS. 153

erescant parts, whose external structure corresponds exactly with others which are totally deprived of such appendages? But this is not a proper place for such nice disquisitions. We shall only remark, that, in proportion as Nature is vivacious, active, and exalted in the monkey kind, she is slow, restrained, and fettered in the sloths. From a defect in their conformation, the misery of these animals is not more conspicuous than their slowness. They have no cutting teeth; the eyes are obscured with hair; the chops are heavy and thick; the hair is flat, and resembles withered herbs; the thighs are ill jointed to the haunches; the legs are too short, ill turned, and terminated still worse: Their feet have no soles, and no toes which move separately, but only two or three claws disproportionally long, and bended downward, which move together, and are more hurtful to their walking, than advantageous in assisting them to climb. Slowness, habitual pain, and stupidity, are the results of this strange and bungled conformation. The sloths have no weapons either offensive or defensive. They are furnished with no means of safety; for they can neither fly nor dig the earth. Confined to a small space, or to the tree under which they are brought forth, they are prisoners in the midst of space, and cannot move the length of one fathom in an hour*. They drag themselves up a tree with

VOL. VII.

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much

* Perillo ligero, sine canicula agilis, animal est omnium quae

much labour and pain. Their cry and interrupted accents they dare only utter during the night.

quae viderim ignavissimum; nam adeo lente movetur, ut ad conficiendum iter longum dumtaxat quinquaginta passus, integro die illi opus sit.——In aedes translatum naturali sua tarditate movetur, nec a clamoratione ulla aut impulsione gradum accelerat; *Oviedo in summario Ind. Occid. cap. 23. traduit de l'Espagnol en Latin par Clusius, Exotic. lib. 5. cap. 16.* Tanta est ejus tarditas ut unius dici spatio vix quinquaginta passus pertransire possit; *Hernand. Hist. Mex.*——The Portuguese have given the name of *sloth* to a very extraordinary animal, which is of the size of an opossum.——The hind part of its head is covered with a coarse mane, and its belly is so gross that it sweeps the ground. It never rises on its legs, and trails so slowly along, that in fifteen days it can hardly accomplish the length of a stone-cast; *Hist. des Indes, par. Maffé, p. 71. Descript. des Indes Occident. par Herrera, p. 252.*——‘Tam lentus est illius gressus et membrorum motus, ut quindecim ipsis diebus ad lapidis ictum continuo tractu vix prodeat;’ *Pison. hist. Bras. p. 322. Nota.* This assertion of Piso, which he has borrowed from Maffé and Herrera, is much exaggerated.——This is the most sluggish of all animals: It is needless to employ greyhounds to overtake him; a tortoise is sufficient; *Desmarchais, tom. 3. p. 301. Nota.* This is another exaggeration.——They require eight or nine minutes to advance one foot to the distance of three inches, and they move one after another with equal slowness. Blows do not accelerate their pace. I have whipt some of them, in order to discover whether pain would give them any animation: But they seemed to be insensible, and I was unable to make them move faster; *Dampier's voyage.*——The sloths do not move fifty paces in a day. When the hunter wishes to take one of them, he may proceed with his sport, and, on his return, he will find the animal very little removed from its former place; *Voyage à Cayenne, par Binet, p. 341.*——This animal receives the epithet of *courser*, because he requires a whole day to accomplish a quarter of a league; *Hist. de l'Orenoque, par Gumilla, tom. 2. p. 13. Nota.* This author seems to be the only one who approaches the truth, with regard to the slowness of these animals.

night. All these circumstances announce the misery of the sloths, and recall to our minds those defective monsters, those imperfect sketches of Nature, which, being hardly endowed with the faculty of existence, could not subsist for any length of time, and have accordingly been struck out of the list of beings. If the regions inhabited by the sloths were not desert, but had been long occupied by men and the larger animals, these species would never have descended to our times: They would have been annihilated, as in some future period will be the case. We formerly remarked, that every thing that possibly could be, really did exist; of which the sloths are a striking example. They constitute the last term of existence in the order of animals endowed with flesh and blood. One other defect added to the number would have totally prevented their existence. To regard those bungled sketches as beings equally perfect with others, to call in the aid of final causes to account for such disproportioned productions, and to make Nature as brilliant in these as in her most beautiful animals, is to view her through a narrow tube, and to substitute our own fancies for her intentions.

Why should not some animals be created for misery, since, in the human species, the greatest number of individuals are devoted to pain from the moment of their existence? Evil, it is true, proceeds more from ourselves than from Nature.

For

For a single person who is unhappy, because he was born feeble or deformed, there are millions rendered miserable by the oppression of their superiors. The animals, in general, are more happy, because the species have nothing to fear from individuals: To them there is but one source of evil; to man there are two. Moral evil, of which he himself is the fountain, has accumulated into an immense ocean, which covers and afflicts the whole surface of the earth. Physical evil, on the contrary, is restrained within very narrow bounds: It seldom appears alone; for it is always accompanied with an equal, if not a superior good. Can happiness be denied to animals, when they enjoy freedom, have the faculty of procuring subsistence with ease, and possess more health, and organs capable of affording greater pleasure than those of the human species? Now, the generality of animals are most liberally endowed with all these sources of enjoyment. The degraded species of sloths are perhaps the only creatures to whom Nature has been unkind, and who exhibit to us the picture of innate misery.

Let us take a closer view of the condition of these creatures. By the want of teeth, they can neither seize prey, nor feed upon flesh or herbage. Reduced to the necessity of living upon leaves and wild fruits, they consume much time in trailing their bodies to the foot of a tree, and
still

THREE-TOED SLOTHS. 157

still more in climbing to the branches* ; and, during this slow and melancholy exercise, which sometimes lasts several days, they are obliged to suffer the most pressing hunger. When arrived upon

* It is alledged by the natives, that this animal lives solely on the leaves of a certain tree, called in their language *Ama-but*. This tree is higher than any other in that country. Its leaves are very small and delicate; and, because the sloth is commonly found in these trees, they have given it the name of *Haut*; *Singul. de la France Antarc, par Thevet, p. 100.*—The sloth lives solely on the leaves of trees, and the highest branches serve him for a retreat; but it costs him two days journey to arrive at them. . . . Neither caresses, threatenings, nor even blows, can make him move quicker; *Hist. des Indes, par Maffé, p. 71. Herrera, p. 252.*—The sloth is not so large, nor so rough as the *samanoir*, or great ant-eater. . . . He feeds upon leaves. . . . These animals do much mischief to trees; after eating all the leaves of one tree, they employ five or six days in descending it and climbing another, however nearly situated; and, though plump and fat when they begin their journey, they are reduced to skin and bone before they finish it. They never abandon a tree till they have made it as bare as it can be in the middle of winter; *Dampier's Voyage.*—They climb trees, but so slowly, that they are easily taken. When seized, they make no resistance, and never attempt to fly. If a long pole is presented to the sloth, he begins to mount it; but the slowness of his motion is tiresome: When he arrives at the top, he remains there, without taking the trouble of descending; *Voyage de Cayenne, par Binet, p. 341.*—The sloths have four legs, which they employ only in climbing: When perched upon a tree, they never quit it till they have eat the whole leaves. They then descend, and mount another, the leaves of which they devour in the same manner.—We placed this animal on the lowest sail of the fore-mast. It spent two hours in climbing to the scuttle, which a monkey would have accomplished in half a minute. One would imagine that it moves by a spring, like the pendulum of a clock; *Travels by Woods Rogers.*

upon a tree, they never descend. They cling to the branches, and devour successively the leaves of every twig. They pass several weeks in this situation, without receiving any drink. When they have rendered the tree entirely naked, they still remain; because they cannot descend. In fine, when the pressure of hunger becomes superior to the dread of danger or death, being unable to descend, they allow themselves to tumble down like an inanimated mass; for their stiff and inactive limbs have not time to extend themselves in order to break the fall.

When on the ground, they are at the mercy of all their enemies. As their flesh is not absolutely bad, both men and rapacious animals go in quest of these animals. It appears that they do not multiply fast, or, at least, if they produce frequently, it must be in small numbers at a time; for they have only two pups. Every circumstance, therefore, concurs to destroy them; and it is extremely difficult for the species to support itself. But, though slow, awkward, and almost incapable of motion, they are obstinate, strong, and tenacious of life. They can live very long without victuals of any kind*. They are covered with thick, dry hair; and, being incapable of exercise, they lose little by perspiration; and, though their food be meager, they fatten by repose.

* I had a present of a living *haut*, which I kept twenty-six days, during which he neither eat nor drank; *Singular. de la France Ant. par Thevet, p. 99.*

pose. Though they have no horns nor hoofs, nor cutting teeth in the under jaw, yet they belong to the ruminating tribes, and have several stomachs. Hence the quality of their food may be compensated by the quantity they take at a time. What is still more singular, instead of very long intestines, like other ruminating animals, their guts are very short and small, like those of the carnivorous kind. This contrast exhibits the ambiguity of Nature. The sloths are unquestionably ruminating animals: They have four stomachs; and yet they want every other character, both internal and external, which generally belongs to animals of this class. There is still another singularity in the conformation of the sloths: Instead of three distinct apertures for the discharge of urine and excrements, and for the purposes of generation, these animals have but one, which terminates in a common canal, as in birds.

Moreover, if the misery resulting from a defect of sentiment be not the worst of all, the pain endured by the sloths, though very apparent, seems not to be real; for their sensations appear to be blunt. Their calamitous air, their dull aspect, and their reception of blows without emotion, announce their extreme insensibility. This bluntness of sensation is farther demonstrated, by their not dying instantly when their hearts and bowels are entirely cut out. Pifo, who made
this

this cruel experiment *, tells us, that the heart, after being separated from the body, beat in a lively manner for half an hour; and that the animal continued to contract its legs slowly, as commonly happens during sleep. From these facts, this quadruped seems to approach not only the turtle, but the other reptiles which have no distinct centre of sensation. All these beings may be said to be miserable, but not unhappy; Nature, even in her most neglected productions, always appears more in the character of a parent than of a stepmother.

These two animals are peculiar to the southern regions of the New Continent, and are no where to be found in the Old. We formerly remarked, that the editor of Seba's cabinet was deceived when he calls the tow-toed sloth, or unau, the *sloth of Ceylon*. This error, which has been adopted

* Secui femellam vivam. . . . habentem in se foetum omnibus modis perfectum cum pilis, unguibus, et dentibus, amni-
oni more caeterorum animalium inclusum. Cor motum suum
validissime retinebat postquam exemptum erat e corpore per
femihoram; placenta uterina constabat multis particulis car-
neis instar substantiae renum, rubicundis magnitudinis variae,
instar fabarum; in illas autem particulas carneas (tenuibus
membranulis connexas) per multos ramulos vasa umbilicalia
instar funis contorta, inserta erant. Cor foemellae duas ha-
bebat insignes auriculas cavae. Exempto corde caeterisque
visceribus, multo post se movebat, et pedes lente contrahebat
sicut dormituriens solet. Mammillas duas cum totidem pa-
pillis in pectore foemella et foetus gerebant; *Pison, hist. Brasil.*
p. 322.

adopted by Klein, Linnaeus, and Brisson, is now more evident than it was formerly. The Marquis de Montmirail has a live unau, which was transmitted to him from Surinam: Those we have in the Royal Cabinet were brought from the same place and from Guiana; and I am persuaded that both species exist through the whole deserts of America, from Brasil * to Mexico. But, as they have never frequented the northern regions, they could not pass from the one Continent to the other. If these animals have sometimes been seen in the East Indies, or on the coast of Africa, it is certain that they must have been transported thither. They cannot endure cold; and they likewise dread rain. The alternation of moisture and dryness changes their fur, which has more the appearance of ill-dressed hemp than of wool or hair.

I shall finish this article with some observations communicated to me by the Marquis de Montmirail, concerning an unau, or two-toed sloth, which he fed three years in his menagerie: 'The hair of the unau is much softer than that of the ai. . . . All that has been said by travellers concerning the excessive slowness of the sloths should, probably, be applied only to the ai, or three-toed species. The unau, though very heavy, and of an extremely awkward gait,

VOL. VII. X 'mounted

* The ai, or three-toed sloth, described and engraven by Edwards, came from the Bay of Honduras; and Ulloa says, that it is found in the environs of Porto-bello.

' mounted and descended the highest tree several
 ' times in a day. It is in the evening and du-
 ' ring the night that he was most active, which
 ' made me suspect that he saw very ill in the day,
 ' and that his eyes were of no use to him but in
 ' the dark. I purchased this animal at Amster-
 ' dam. It was fed with sea biscuit; and I was
 ' told, that, during the verdure of the trees, it
 ' would require nothing but leaves. We gave
 ' him leaves, which he eat freely, when they
 ' were tender; but, as soon as they began to dry,
 ' or were pierced by caterpillars, he refused them.
 ' During the three years that I kept him alive in
 ' my menagerie, his ordinary food was bread,
 ' apples, and roots; and his drink was milk.
 ' He always laid hold, though with difficulty, of
 ' what he wanted to eat, with his fore paws; and
 ' the difficulty increased in proportion to the
 ' largeness of the morsel. He seldom cried;
 ' his cry is short, and he never repeats it twice,
 ' without a considerable interval. This cry,
 ' though plaintive, has no resemblance to that of
 ' the *ai*, if it be true that *ai* is the sound of that
 ' animal's voice. The most natural situation of
 ' the *unau*, and which he prefers to all others,
 ' is hanging on a branch, with his body turned
 ' downward. He sometimes sleeps in this po-
 ' sition, his fore paws being fixed to the same
 ' point, and his body forming an arch. The
 ' strength of his muscles is incredible; but it be-
 ' comes useless to him when he walks; for his
 ' motion

‘ motion is constrained and wavering. This
 ‘ structure alone seems to be the cause of the ani-
 ‘ mal’s slowness, which, besides, has no violent
 ‘ appetites, and does not recognise those who
 ‘ take care of him.’

S U P P L E M E N T.

M. de la Borde remarks, that there are two species of these animals in Cayenne, the one called the *bashful sloth*, and the other the *sheep-sloth*. The latter is twice as long as the former, and of the same thickness. He has long, bushy, whitish hair, and weighs about twenty-five pounds. He throws himself down upon men from the tops of trees, but in a manner so sluggish, that it is easy to avoid him. He feeds during the day as well as the night.

‘ The bashful sloth,’ M. de la Borde remarks,
 ‘ has black spots on his body, weighs twelve
 ‘ pounds, keeps always on trees, and eats the
 ‘ leaves of the Surinam fig-tree, which are said
 ‘ to be poisonous. The bowels of this sloth
 ‘ poison dogs, and yet the flesh is good eating ;
 ‘ but its use is confined to the common people.

‘ Both species produce only a single young,
 ‘ which they always carry on their back. It is
 ‘ probable,

' probable, though I am not certain, that the fe-
 ' males bring forth on trees. They feed on the
 ' leaves of the Brasilian plumb-tree *, and of
 ' the Surinam fig. The two species are equally
 ' common ; but they are not frequent in the en-
 ' virons of Cayenne. They sometimes suspend
 ' themselves by their claws on branches of trees
 ' which hang over the rivers ; and, when in this
 ' situation, it is easy to cut the branch and make
 ' them fall into the water ; for they never quit
 ' their hold.

' When ascending a tree, this animal carelessly
 ' stretches out one of its fore pats, and fixes its
 ' long claw as high as it can reach. It then
 ' heavily raises its body, gradually fixes the o-
 ' ther pat ; and, in this manner, continues to
 ' climb. All these movements are incredibly
 ' slow and languid. When kept in houses, they
 ' always climb upon some post or door, and ne-
 ' ver choose to rest on the ground. If a stick is
 ' held out to them when on the ground, they
 ' lay hold of it, and mount to its top, where they
 ' firmly adhere with their fore paws, and em-
 ' brace the stick with their whole body. They
 ' have a weak plaintive cry, which is heard at no
 ' great distance.'

From this passage, it is obvious, that the sheep-
 sloth is the same with what we have called
unau, or the three-toed sloth ; and that the bath-
 ful-sloth is the *ai*, or two-toed species,

M,

* *Spondias lutea* of Linnaeus.



'Two-toed SLOTH.



A. Bell's sculp.

YOUNG three-toed SLOTHS.

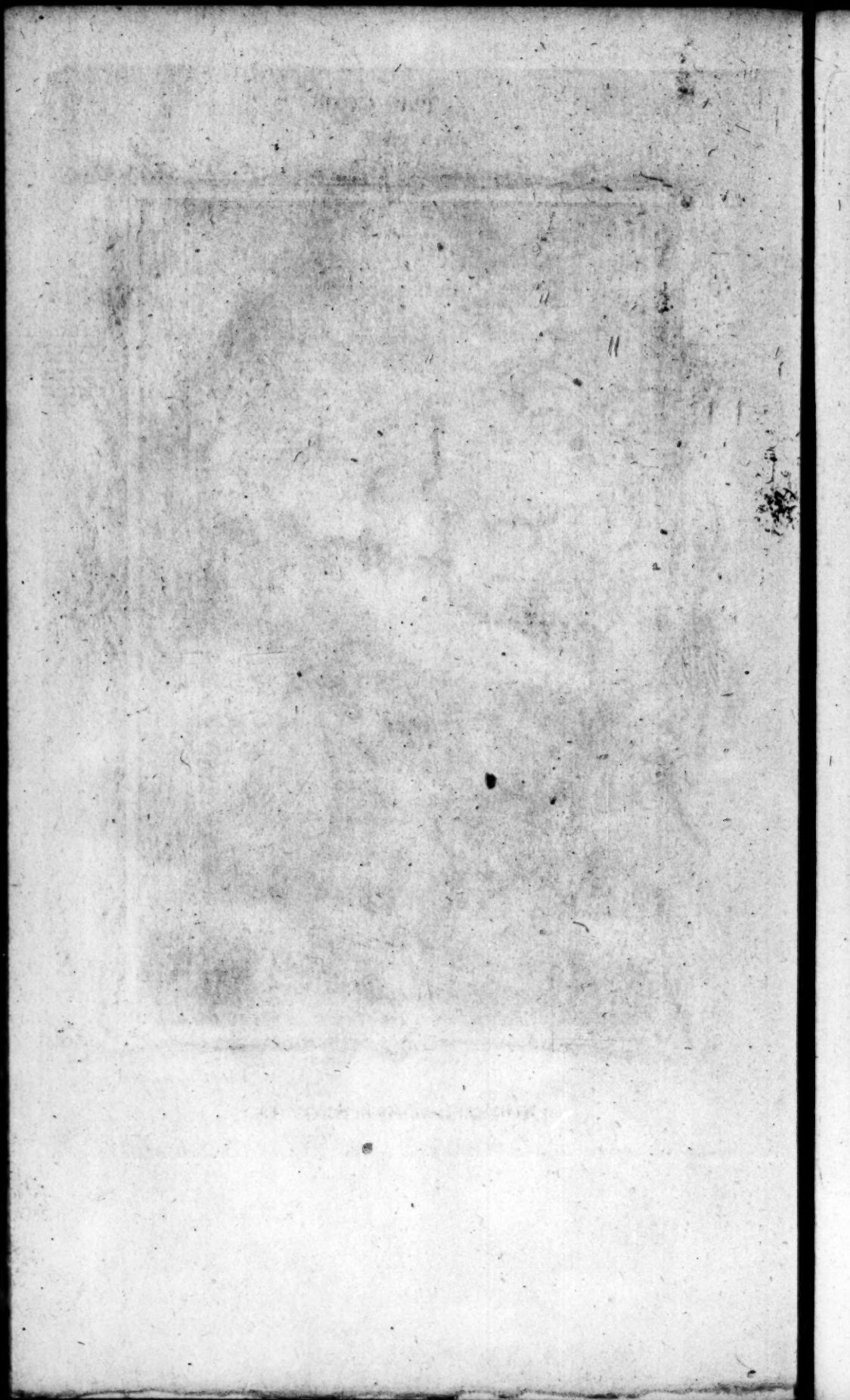
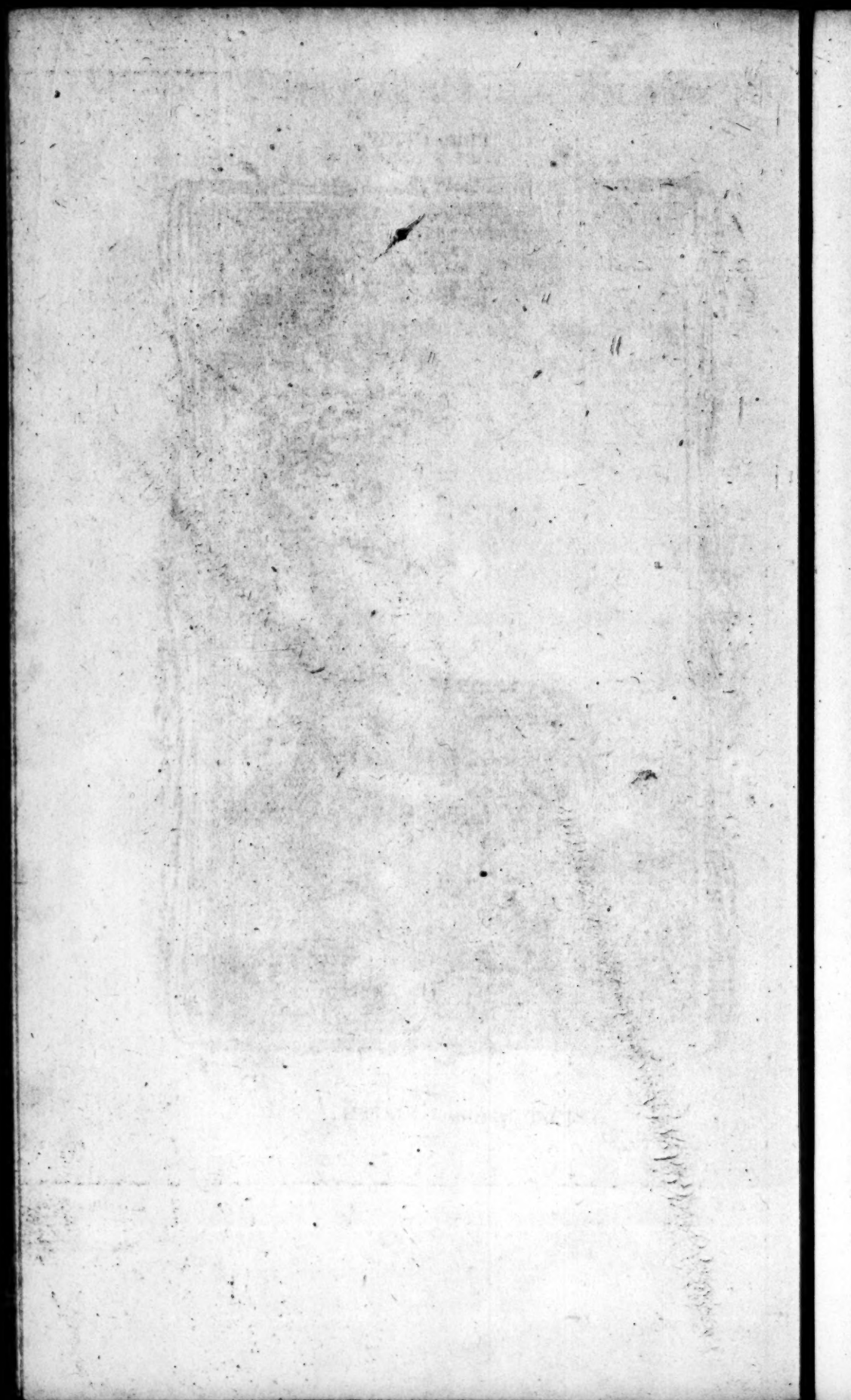


Plate CCXIV.



ADULT three-toed SLOTH.



M. Vosmaër, an able naturalist, and superintendent of the Prince of Orange's cabinet, has criticised two assertions in my history of these animals. He remarks, 'that we ought to reject the relation of M. de Buffon, when he tells us, that the sloths are unable to descend from a tree, but allow themselves to fall down like blocks*.'

I advanced this fact on the authority of eyewitnesses, who assured me, that they had sometimes seen the animal fall down at their feet. The fact is farther supported by the testimony of M. de la Borde. What I have said on this subject, therefore, ought by no means to be rejected.

The second assertion is not equally well founded. I willingly acknowledge my mistake, when I said that the sloths had no teeth, and I thank M. Vosmaër for correcting this error.

The

* Descript. d'un paresseux pentedactyle de Bengale, p. 5.

102 THREE-TOED SLOTHS.

The SURIKATE, or Four-toed
WEASEL*.

THIS animal was purchased in Holland, under the name of *Surikate*. It is a native of Surinam, and other provinces of South America †. We fed it for some time; and afterwards M. de Seve, who has drawn, with equal skill and attention, the animals published in this work, having kept it alive during several months, communicated to me the remarks he had made with regard to its natural habits and dispositions. It is a handsome, active, and dexterous animal, sometimes walking on end, and frequently sitting

* The four-toed weasel, with the upper jaw much longer than the lower, and very moveable and pliant. The ears are rounded; the hair pretty long, hard, and upright, varied with black and white; the points black. It has only four toes on each foot, which is an exception in the weasel kind. The tail is taper. The length of the animal, from nose to tail, is about one foot, and that of the tail six inches; *Pennant's synops. of quad. p. 228.*

† Mr Pennant remarks, that M. de Buffon is the only person who has described this animal, but that he seems to have been deceived with regard to the place of its nativity. Instead of South America, Mr Pennant says, that it inhabits the Cape of Good Hope and the island of Java, and refers, for his authorities, to *Pallas, Miscel. Zool. p. 59. 60.* and *Rumph. Herb. Amboin. app. p. 71.* The latter, when speaking of the ichneumon, or muncos, says, 'ac distinguendus est a suracat-
' je seu *Javanorum* zupe, quod est mustela.'

ting upright, with his fore feet hanging down, his head erect, and moving on the neck as upon a pivot. He always assumed this attitude when he came near the fire to warm himself. He is not so large as a rabbit, and pretty much resembles the ichneumon, both in size and hair, only it is rougher, and the tail is not so long. But, by the prominency of the upper part of the muzzle, he makes a nearer approach to the coati, or Brazilian Weasel, than to any other animal. He has also a character which is peculiar to him and the hyaena; for they are the only animals which have four toes on all their feet.

At first, we fed this surikate with milk, because he was very young: But his taste for flesh soon appeared. He eat raw meat, and particularly the flesh of chickens, with great avidity. He likewise endeavoured to seize young animals. A young rabbit, which lived in the same house, would have fallen a prey to him, if he had not been prevented from making the attack. He was fond of fish, and still fonder of eggs. I have seen him carry off, with his two paws, eggs which had been put into the water to be boiled. He refused fruits, and even bread, unless it was mashed. Like the squirrel, he employed his fore paws to convey his victuals to his mouth. In drinking, he lapped like a dog, and never drank water but when it was warm. His ordinary drink was his own urine,
though

though it had a very strong odour. He frolicked with the cats, and always innocently. He did no harm to the children, and never bit any person but the master of the house, to whom he had taken an aversion. He never gnawed with his teeth, but often injured the plaster and furniture by scratching with his claws. He was so well tamed, that he knew his own name. He went about through the whole house, and returned whenever he was called. He uttered two kinds of sounds. When he was tired by being alone, or heard any unusual noise, he barked like a young dog; and, when he was caressed, or felt any pleasant emotion, he made a noise as brisk and striking as a small rattle rapidly turned round. This animal was a female, and appeared to be frequently in season, notwithstanding the coldness of the climate, which, though every thing was done to cherish and keep her warm, she could support during one winter only.

S U P P L E M E N T.

We formerly remarked, that the furikate did no injury to children; and that it never bit any person but adults, and, among others, the master of the family, against whom it had taken an aversion. I since learned that it never attacked
either

either the mother or the children of his family, but that it bit a number of other persons of both sexes. M. de Sève remarked, that it was induced to bite by some particular odour. When laid hold of, the cartilage at the end of its nose curled up while it smelled, and, according to the odour received, it either bit or did not bite. This experiment was tried upon a number of people; and, it is singular, whenever it bit one person, it always continued to bite him. Some people were so disagreeable to him, that he endeavoured to make his escape in order to bite them; and, when he could not lay hold of the legs, he darted upon their shoes or petticoats. He even used several artifices to come near those whom he wished to bite.

M. Vosmaër, in his description of a flying squirrel, makes the following pertinent remarks.

‘M. de Buffon,’ says M. Vosmaër, ‘has probably been deceived both with regard to the name and the native country of the surikate, which was last summer transmitted by M. Tulbagh to the Prince of Orange. It belongs not to America, but to Africa. This small animal, a male and a female of which were directed to me, but the female died in the passage, was unknown to Kolbe, or at least is not mentioned by him, appears to be found far up the country only: This inference may be drawn from the governour’s letter, which I received at the same time, and where he makes the following

' following remark: I send by the Captain two
 ' small animals, a male and a female, to which
 ' I can neither give a name, nor refer them to a-
 ' ny other species; because they were, for the
 ' first time, brought from the remote deserts and
 ' stony mountains of this vast country. They are
 ' very mild and gentle. They feed upon fresh
 ' meat, either boiled or raw, eggs, and ants. I
 ' hope they will arrive in life; for, I imagine, they
 ' were never hitherto seen in Europe.'

The evidence of M. Tulbagh is positive, and
 M. de Vosmaër's remark is just; for, though I
 had this animal alive for a long time, I received
 its name and country from no better authority
 than an animal merchant, who told me he had
 purchased it in Holland under the name of *suri-*
kate, and that it came from Surinam. We are
 now certain that it is neither found in Surinam
 nor in the other provinces of South America,
 but in the mountains of Africa above the Cape
 of Good Hope; and, as to the name, it is of
 little moment: It can be changed when we re-
 ceive better information.

The



A. Bell & Son, Sculp.

SURICATE.

The TARSIER, or WOOLLY JERBOA†.

WE accidentally procured this animal from a person who could neither tell its name, nor from whence it came. It is remarkable for the excessive length of its hind legs. The bones of the feet, and particularly those which compose the upper part of the *tarsus*, are prodigiously long; and it is from this distinctive character that we have derived the name of the animal. The tarsier, however, is not the only quadruped whose hind legs are constructed in this manner. The tarsus of the Egyptian Jerboa is still longer. Hence the appellation of *tarsier* is only precarious, and ought to be changed as soon as we learn the name which the animal receives in the country where it is produced. The Jerboa is found in Egypt, Barbary, and the East Indies.

† The jerboa with a sharp pointed nose, long, erect, naked, transparent ears, large eyes, two cutting teeth in each jaw, and, what is peculiar to this species, two canine teeth in each. It has five long slender fingers on each foot, resembling those of a monkey. The fore legs are moderately long. The hind legs are of a very remarkable length, especially the second bone; that next the foot is slender and naked. The tail is exceedingly long and slender. The hair on the body is long, soft, and woolly. The head is ash-coloured, and the rest of the body tawny, mixed with ash-colour. It is larger than a common mouse; Pennant's *Synops. of quad.* p. 293.

Indies. I at first imagined that the tarsier might belong to the same countries, on account of its resemblance to the jerboa. Both these animals are of the size of a middling rat. The hind legs of both are excessively long, and those before very short. In both, the tail is of a prodigious length, and garnished toward the extremity with long hairs. Both have very large eyes, and erect, large, open ears. In both, the inferior part of the hind legs are naked, while the rest of the body is covered with hair. As these animals possess, in common, such peculiar characters, it might be presumed that they were neighbouring species, or, at least, species produced by the same climate and country. From a comparison of their other parts, however, this is rendered extremely doubtful. The tarsier has five toes on all his feet, and may be said to have four hands; for his five toes are very long, and well separated. The thumbs of the hind feet terminate in a flat nail; and, though the nails of the other toes be pointed, they are so short and small, that the animal can use its fore feet in the same manner as hands. The jerboa, on the contrary, has only four toes, and four long crooked claws on the fore feet; and, instead of a thumb, it has only a tubercle without any nail. But, what removes these animals to a greater distance, the jerboa has but three toes, or three large claws, on the hind feet. This distinction is too great for animals nearly allied in species; and



A. Belli sculp.

TARSIER.

and it is not impossible that they belong to very distant climates; for the tarrier, by his small size, his four hands, long toes, and small claws, and his long tail and feet, seems to make a near approach to the Murine, Mexican, and Surinam opossums. But we here throw out our doubts only; and shall be highly obliged to any person who can ascertain or remove them, by pointing out the real country and name of this animal.

The

173 WOOLLY JERBOA

and it is not impossible that they belong to very distant climates; for the latter, by his small

The PHALANGER, or SURINAM OPOSSUM†.

and his long tail, and his long ears, and his approach to the murine, Mexican, and Surinam opossums. But we here throw out our doubts

THE male and female phalanger, which were transmitted to us under the appellation of *Surinam rats*, are much less allied to the rats, than the animals whose history we have given under the name of *marmose*, or murine opossum, and *cayopollin* or Mexican opossum. We have rejected the denomination of *Surinam rats*, because it is both compounded and ill applied. As the animal is mentioned by no traveller or naturalist, we have called it the *phalanger*, because its phalanges are very singularly constructed,

† Opossum with a thick nose, short ears covered with hair, eight cutting teeth in the upper-jaw, and two in the lower. The hair on the upper part of the body is reddish, mixed with light ash-colour and yellow. The hind part of the head, and middle of the back, are marked with a black line. The throat, belly, legs, and part of the tail, are of a dirty yellowish white. The rest of the tail is brown and yellow. The body of the female is marked with white. The first and second toes of the hind feet are closely united. The claws are large. The thumb on the hind feet is distinct. The bottom of the tail is covered with hair for near two inches and a half; the rest of it is naked. The length of the animal from nose to tail, is near nine inches, and that of the tail ten; *Pennant's Synops. of quad. p. 209.*

Philander ex rufo luteus in dorso, in ventre ex flavo albicans, capite crasso; Brisson, quad. p. 213. Seb. Mus. tom. 1. p. 50. tab. 31. fig. 8. Klein. quad. p. 58.



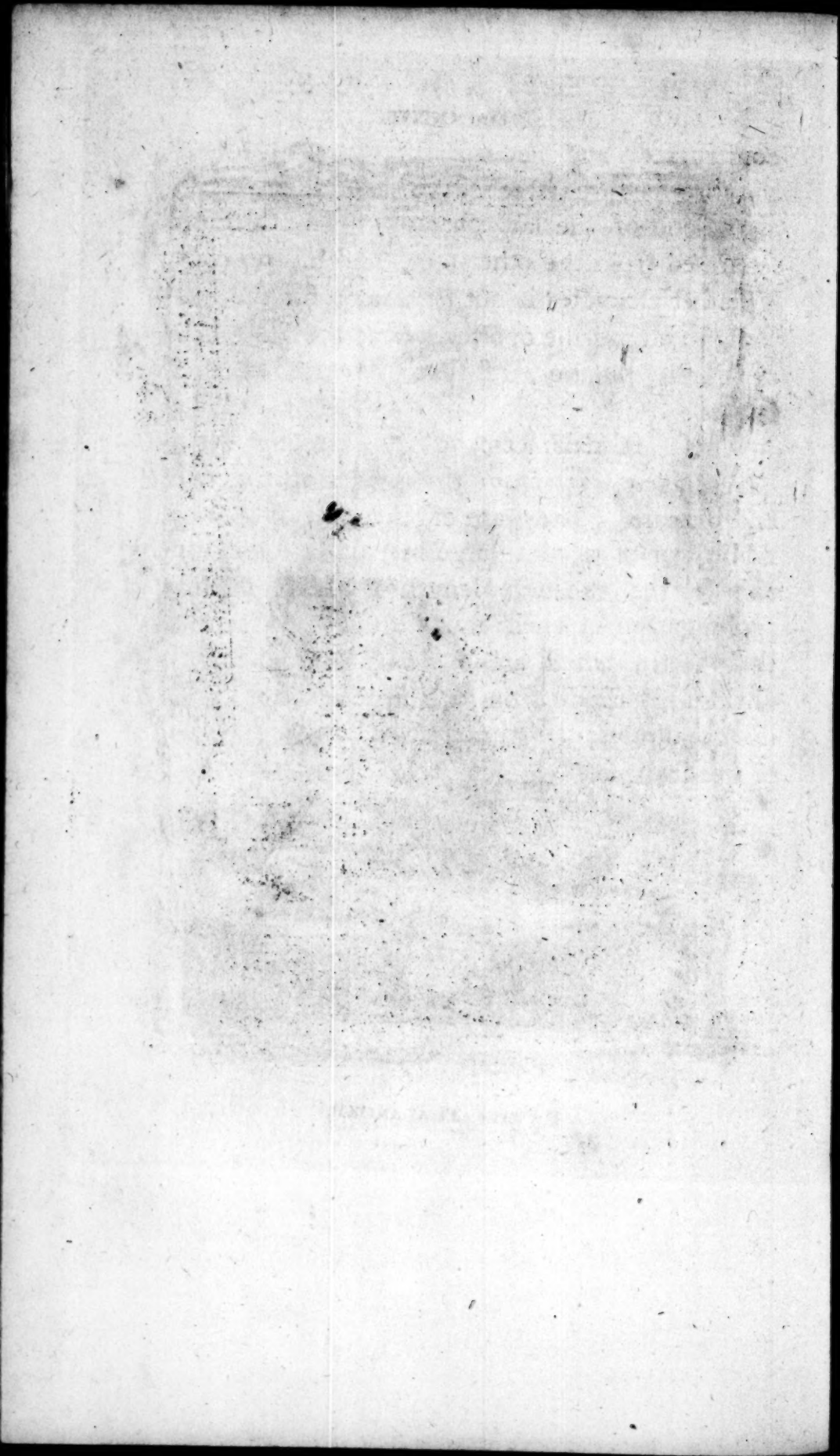
PHALANGER.

Plate CCXVIII.



FEMALE PHALANGER.

5



constructed, and because the two first toes of the fore feet are attached to each other, as far as the end of the last phalanx. The thumb is separated from the other toes, and has no claw. This last character is not peculiar; for the Virginian and murine opossums have the same kind of thumb, but none of them have united phalanges.

These animals seem to vary among themselves, as appears from the figures of the male and female. They are of the size of a small rabbit, or of a very large rat, and are remarkable for the excessive length of their tail, the prolongation of their muzzle, and the form of their teeth, which alone would be sufficient to distinguish them from the murine and Virginian opossums, the rats, and every other species of quadrupeds.

The

THE PHALANGER.
173

constructed, and because the two first toes of the forefeet are attached to each other, as far as the second toe is concerned, and the hind feet are separated from the forefeet, and the hind feet are not peculiar; for the Vir- ginian and Iguine opossums have the same kind

The COQUALLIN, or VARI-
RIED SQUIRREL *

THIS animal, which was sent to me from America, under the name of the *orange squirrel*, I recognised to be the same with that which Fernandez calls *qaulucallotquapachli*, or *cozticotoquallin* †. But, as these Mexican words are difficult to pronounce, I have abridged the *last* into *coquallin*. It is not a squirrel, though it resembles that animal in figure, and in bushiness of tail; for it differs from the squirrel not only in several external characters, but in its dispositions and manners.

The coquallin is much larger than the squirrel: *In duplam fere crescit magnitudinem*, says Fernandez. It is a handsome animal, and its colours are very remarkable. The belly is of a fine yellow colour, and the head, as well as the body are variegated with white, black, brown, and orange. Like the squirrel, it covers itself with its tail; but it has no pencils of hair at the tips of the ears; it mounts not upon trees; and
it

* Squirrel with plain ears, the upper part of the body varied with black, white, and brown, and the belly tawny. It is twice the size of the common squirrel; *Pennant's Synops. of quad.* p. 285.

† Fernand. hist. anim. Nov. Hispan. p. 8.

Plate CCXIX.



A. Bell's sculp.

COQUALLIN.

it dwells, like the ground squirrel, in holes, and under the roots of trees, where it brings forth its young. It lays up grain and fruits for nourishment during the winter. It is timid and crafty, and so wild that it can never be tamed.

The coquallin seems to be peculiar to the South American regions. The white and orange squirrels of the East Indies are much smaller, and their colours are uniform. They are genuine squirrels, which dwell and bring forth upon trees. But the coquallin, and ground squirrel of America, live under the earth like rabbits, and have no relation to squirrels but what arises from their figure.

The HAMSTER, or German MAR- MOT*.

THE hamster is the most famous, as well as the most destructive of all rats. We omitted its history, when treating of the other rats, because at that time we had not an opportunity of seeing and examining the animal. For the knowledge we have now acquired of it, we are obliged to the Marquis de Montmirail and M. de Vaitz, who sent us two live hamsters,

* Marmot with large rounded ears, and full black eyes. The colour of the head and back is a reddish brown, and that of the cheeks white. Beneath each ear there is a white spot, another on each shoulder, and a third near the hind legs. The breast, upper part of the fore-legs, and the belly, are black. The tail is short and almost naked. It has four toes and a fifth claw on the fore-feet, and five toes behind. The length of the body is about nine inches, and that of the tail three; *Pennant's synopsis of quadrupeds*. p. 271.

Hamster, Hamester, Cricetus; *Agricola, An. Subter.* p. 486. *Gesner quadrupeds*. p. 738. *Raii synopsis quadrupeds*. p. 221.

Shrzeczek, Chomik; *Rzacinski Polon.* p. 232.

Porcellus frumentarius; *Schwenckfelde Theriotroph.* p. 118.

Krietsch, Hamster; *Kramer. Austr.* p. 317.

Mus cricetus, cauda mediocri, auriculis rotundatis, corpore subtus nigro, lateribus rufescentibus, maculis tribus albis; *Linn. syst. nat.* p. 82.

Glis ex cinereo rufus in dorso, in ventre niger, maculis tribus ad latera albis; *Briffon. quadrupeds*. p. 117.

hamsters, accompanied with an instructive memoir * concerning their manners and dispositions. We fed one of these animals during several months, in order to examine it attentively, and afterwards dissected it, with a view to compare its internal structure with that of other rats. In its anterior parts, it has a greater resemblance to the water rat than to any other animal. It resembles him still more in the smallness of its eyes and the fineness of its skin. But the tail, instead of being long, is shorter than that of the compagnol or short-tailed mouse, which, as formerly remarked, has a great similarity to the water rat in its internal conformation. The hamster seems to be, with regard to the short-tailed field mouse, what the surmulot, or Norway rat, is to the long-tailed field mouse. All these animals live under ground, and appear to be animated with the same instinct. They have nearly the same manners, and particularly that of collecting magazines of grain in their holes. We shall not, therefore, enlarge so much on the resemblances in figure and dispositions, as upon the differences which distinguish the hamster

* I refer you to a pretty full memoir concerning the hamster which I received from M. de Waitz, minister of state to the Landgrave of Hesse-Cassel, who, to his brilliant talents for state affairs, joins an ardent desire for the improvement of natural history.——He, at the same time, transmitted to me two of these animals alive, which I shall send you by the first opportunity; *Lettre de M. le Marquis de Montmirail à M. de Buffon, 31. Juillet 1762.*

hamster from all the other rats of which we have formerly treated:

Agricola * is the first writer from whom any genuine information can be derived concerning the hamster, to which Fabricius † added a few facts.

* Hamster, quem quidam cricetum nominant, existit iracundus et mordax, adeo ut si eum eques incaute persequatur, soleat profilire et os equi appetere, et si prehenderit mordicus tenere. In terrae cavernis habitat—pedes habet admodum breves; pilis in dorso color est fere leporis: In ventre niger, in lateribus rutilus, sed utrumque latus maculis albis tribus numero distinguitur. Suprema capitis pars ut etiam cervix eundem quem dorsum habet colorem. Tempora rutila sunt; guttur est candidum.—pili autem sic inhaerent cuti ut ex ea difficulter evelli possint.—atque ob hanc causam et varietatem pelles ejus sunt pretiosae: Multa frumenti grana in specum congerit, et utrinque dentibus mandit.—ager Turingiae eorum animalium plenus ob copiam et bonitatem frumenti. *Georg. Agricola*, de animantibus subterraneis; *Apud Gesner, hist. quad. p. 738.*

† Hamster animal est agreste sub terra habitans—colore vario, ventre non candido sed potius nigerrimo.—Dentes habet in anterioris oris ima supremaque parte binos, prominentes et acutos, malas laxas et amplas, ambas exportando importandoque replet: Ambabus mandit.—Cum terram effodit, primum anterioribus pedibus (quos talpae similes habet brevitate sed minus latos) eam retrahit, longius progressus, ore exportat. Cuniculos ad antrum plures agit cubiti profunditate, sed admodum angustos.—Antrum intus extendit ad capienda frumenta.—Messis tempore grana omnis generis frumenti importat.—Terra ante cuniculos erecta non tumuli modo assurgit, ut talparum tumuli, sed ut agger dilatatur.—Vescitur hoc animal frumento omnis generis, et si domi alatur pane ac carnibus. In agro etiam mures venatur. Cibus cum capit in pedes priores erigitur.—Quamvis autem corpore exiguum sit, natura tamen est pugnax et temerarium. *Laceffitum quidquid ore gestat pulsat*

facts. But Schwenckfeld * has done more than all the other authors put together. He dissected the hamster, and gave a description of it, which corresponds almost in every article with

fatis utroque pede malis subito egerit, recta hostem invadens, spiritu oris et assultu protervum as minax.——Nec terretur facile, etiam si viribus impar ei sit quem petit.——Vidi ipse, cum equum assultando naribus corripuisset non prius morsum dimisisse quam ferro occideretur.——Hamestri pelles maxime durabilis.——In Turingia et Misnia hoc animal frequens, non omnibus tamen in locis, sed in uberrimis et fertilissimis. In Lusacia circa Radeburgum, e satis panici effoditur; Mulbergi ad Albim in vinetis reperitur, nam maturis quoque uvis vescitur; *Georg. Fabricius, apud Gesner, hist. quad. p. 739. & 740.*

* Porcellus frumentarius, Hamster minor paulo cuniculo. Longitudo dodrantalis et palmi unius. Pilis in dorso fere leporis est colore. Gula, venter, et pedes interiores nigra sunt. Rubet in lateribus et circa caudam, quae coloris murini tres digitos longa. Maculae albae sub auribus, juxta rostrum, supra armos et coxam. Pedes admodum breves, digitis et unguiculis albidis quinque utrinque. In pedum planta, seu parte digitorum inferiore, tubercula veluti calli ubique eminent. Oculi splendidi, nigri, elegantes. Dentes habet ut lepus anteriores binos incisores et laterales. Lingua mollis spongiosa. E bucculis vesiculae utrinque amplae membranae sub cute porriguntur, quae sensim gracilescentes dorso tenui ligamento alligantur. Has instar sacci messis tempore granis tritici, siliginis, et aliis seu folles quospiam infarcit, atque in suos cuniculos comeatum in futuram hyemem congerit ac reponit.

Pulmonibus candidis quatuor sunt lobi.

Cor renibus paulo majus mucrone obtusiore. Hepar triplicatum apparet, unum super alterum impositum. Inferior pars dorso adjacens duos obtinet lobulos. Media, quae maxima, integra absque incisuris integrum abdomen secundum latitudinem occupans ventriculum ex parte amplexatur. Superior portio divisa aliis incumbens diaphragmati proxime subjacet. Fel nullum conspiciere licuit.

Ventriculus

with ours; yet he is hardly quoted by our more modern naturalists, who content themselves with copying Gesner. In justice to this author, we have inserted his remarks entire; and, when to these we add the observations of M. de Waitz, the history of this animal will be complete.

‘ The habitations of the hamster are different-
 ‘ ly constructed, according to their sex, age,
 ‘ and the quality of the ground. The house
 ‘ of the male has an oblique passage, at the
 ‘ mouth of which there is a considerable heap
 ‘ of earth. At a distance from this oblique
 ‘ passage, there is a hole which descends perpen-
 ‘ dicularly

Ventriculus ei duplex. Unus candidus rotundiusculus, cui alter per isthmum annectitur longiusculus, sinistrum hypochondrium occupans, hinc prope isthmum oesophagus inseritur, alteri sub dextro hypochondrio intestina adhaerent. In utroque reperiebatur chylus candidus, puliculae farinaceae similis, crassior tamen in sinistro.

Intestina gracilia flavent; ubi desinunt, incipit caecum anfractuosum amplum, hinc crassiora ad caeruleum vergunt colorem. Excernit pilulas longiusculas instar murium. Lien coloris sanguinei soleam fere humanam repraesentat.

Renes bini phaseoli magnitudine et figura. Vesicula candida pisum Italicum aequat, rotunda lagenulae instar.

Parit quinque sexve, uno partu.

In terrae cavernis habitat, agri vastator et Cereris hostis. Autumno multa frumenti grana in specum congerit, et utrinque dentibus mandit.

Admodum pinguescit; ob id porcellis Indicis non inepte comparatur.

In cibum non recipitur; sed pelles consuuntur ad vestimenta.

De caverna sua aqua fervente seu frigida copiose infusa expellitur.

' dicularly into the chambers of the lodging.
 ' No earth appears near this hole; which ren-
 ' ders it probable that the oblique passage is dug
 ' from without, and that the perpendicular hole
 ' is begun from below, and continued upward.

' The house of the female has likewise an ob-
 ' lique passage, and, at the same time, two,
 ' three, and not unfrequently eight perpendicu-
 ' lar holes, in order to allow her young to go out
 ' and in at pleasure. The male and female have
 ' each a different dwelling, and the female
 ' makes her's deeper than the male.

' At the distance of a foot or two on each
 ' side of the perpendicular holes, the hamsters
 ' of both sexes, according to their age, and their
 ' number of young, dig one, two, three, and
 ' sometimes four cavities in the form of vaults,
 ' both above and below, which are more or less
 ' capacious in proportion to the quantity of
 ' their provisions.

' The perpendicular hole is the common pas-
 ' sage: The oblique one is made for the pur-
 ' pose of carrying out the earth. As the decli-
 ' vity of this oblique passage is more gentle in
 ' one cavity than in another, it may likewise pro-
 ' mote a circulation of air in those subterrane-
 ' ous habitations. In the cavern where the female
 ' brings forth her young, there is no magazine
 ' of grain, but a nest of straw and herbs. The
 ' depth of the caverns is various: A young
 ' hamster, in the first year, makes his cavern not
 ' above

‘ above a foot deep ; but the old ones frequent-
 ‘ ly dig to the depth of four or five feet. The
 ‘ whole habitation, including the passages and
 ‘ caverns, is sometimes from eight to ten feet
 ‘ in diameter.

‘ These animals provide their magazines with
 ‘ dry clean grain, corn in the ear, peas and
 ‘ beans in their pods, and afterwards carry out
 ‘ the husks and pods by the oblique passages.
 ‘ In transporting their provisions, they use the
 ‘ pouches in their cheeks, each of which will
 ‘ hold a quarter of an English pint.

‘ The hamster begins to lay up provisions a-
 ‘ bout the end of August. When his magazines
 ‘ are filled, he covers them, and carefully shuts
 ‘ up all the avenues with earth, which prevents
 ‘ his retreat from being easily discovered, and
 ‘ it is only to be recognised by the heap of
 ‘ earth near the oblique passage mentioned a-
 ‘ bove ; after which, the perpendicular holes
 ‘ must be investigated. The most common me-
 ‘ thod of seizing these animals is to dig them
 ‘ out, which is a laborious task, on account of
 ‘ the extent and depth of their holes. A per-
 ‘ son, however, who accustoms himself to this
 ‘ species of hunting, fails not to profit by it ;
 ‘ for, in autumn, which is the proper season, he
 ‘ generally finds in each habitation, beside the
 ‘ fur of the animal, two bushels of good grain.
 ‘ The hamsters produce twice or thrice in a year,
 ‘ and bring forth five or six, and often more,

‘ at

‘ at each litter. In some years they appear in
 ‘ prodigious numbers, and, in others, hardly
 ‘ any of them are to be seen. It is in moist
 ‘ years that they multiply so greatly; and this
 ‘ numerous multiplication occasions a dearth, by
 ‘ the general devastation they make among the
 ‘ corn.

‘ At the age of six weeks or two months,
 ‘ the hamsters begin to dig their habitations;
 ‘ but they neither couple nor produce during
 ‘ the first year.

‘ The polecats destroy great numbers of the
 ‘ hamsters, and take possession of their holes.

‘ The hamsters are commonly brown on the
 ‘ back and white on the belly. Some of them,
 ‘ however, are gray; and this difference may
 ‘ be the effect of advanced age. Some of them
 ‘ are also totally black.’

Like the mullet, or long-tailed field mouse,
 the hamsters mutually destroy each other. Of
 two kept in a cage, the female killed the male
 in one night, and, after cutting the muscles
 which fix the jaws to each other, devoured
 a part of the intestines. They produce several
 times in the year, and are so destructive, that,
 in the states of Germany, a price is set upon
 their heads. They are so numerous in that part
 of the Continent, that their fur is a considerable
 article of commerce.

All these facts, which we have extracted
 from the memoir of M. Waitz, and the remarks

of M. de Montmirail, appear to be certain, and correspond with our other sources of information concerning the hamsters. But it is not equally certain, as mentioned in the same memoir, that they remain in a torpid state during the winter, and revive in the spring. The hamster which we kept last winter (1762-3) in an apartment without fire, and where the cold frequently congealed water, never became torpid, but moved about and eat its ordinary food. But several kinds of dormice, which were likewise in our possession, became torpid in a much smaller degree of cold. Hence the hamster neither approaches the dormice nor marmot by this character; and some of our naturalists have improperly called it the *marmot of Strasburg*, though it sleeps not like the marmot, nor is found in the neighbourhood of Strasburg.

S U P P L E M E N T.

In the *Gazette de Littérature*, of the 13th of September 1774, we find the following observations concerning the hamster, extracted from a German publication by M. Sulzer.

‘ The corn-rat, in German *hamster*, cannot be
 ‘ more commodiously described than at Gotha,
 ‘ where, in one year, 11574 skins of it, in another,
 ‘ ther,

‘ ther, 54429, and, in a third, 80139, have been
 ‘ brought to the town-house. In general, this
 ‘ animal inhabits temperate countries. When
 ‘ irritated, its heart beats 180 times in a minute.
 ‘ The weight of the body is to that of the brain
 ‘ as 1 to 193.

‘ These animals lay up magazines which of-
 ‘ ten consist of twelve pounds of grain. In
 ‘ winter, the female sinks very deep in the earth.
 ‘ The male is a bold animal, and defends him-
 ‘ self against dogs, cats, and men. He is natu-
 ‘ rally quarrelsome, agrees not with his own
 ‘ species, and sometimes, in a transport of fury,
 ‘ slays his own family. He devours the feeble
 ‘ individuals of his species, as well as mice and
 ‘ birds; and yet he feeds upon all kinds of
 ‘ herbs, fruits, and feeds. He drinks little; and
 ‘ the female remains longer in her winter re-
 ‘ treat than the male. The former goes four
 ‘ weeks with young, and often produces six at
 ‘ a litter. In a few months, the females be-
 ‘ come fertile. The rat called *Illis* * kills the
 ‘ hamster.

‘ When this animal is in a torpid state, nei-
 ‘ ther respiration, nor any kind of feeling, can
 ‘ be perceived. The heart, however, beats fif-
 ‘ teen times in a minute, which is discovered by
 ‘ opening the chest. The blood continues to be
 ‘ fluid, and the intestines are not irritable. Even
 ‘ an

* The *Illis* is the polecat, and not a rat, as this author
 alledges.

‘an electrical shock does not awake him: In the open air, he is never reduced to a torpid state.’

M. Sulzer mentions the gradual manner in which this animal recovers his vigour and activity.

‘The utility of the hamster is confined to the destruction of mice; but he himself is much more mischievous †.’

We wish that M. Sulzer had marked the precise degree of cold, or want of air, which renders these animals torpid; for we still maintain, what was formerly remarked, that a hamster confined in a cage, and in a room where water froze, was not reduced to a torpid state during the winter 1763. This fact will receive additional confirmation from the following observations of M. Allamand, which he has published at the end of the Dutch edition of my work.

Addition to the history of the HAMSTER, by
M. ALLAMAND.

The hamster is a quadruped of the mouse kind, which sleeps during the winter, like the marmots. The legs and neck are short; the head is thickish; and the mouth is garnished
on

† Observat. sur le rat de blé, par M. Sulzer; *Gazette de Littérature*, 13 Sept. 1774.

on each side with whiskers. The ears are large and almost naked. The tail is short, and one half of it naked. The eyes are round and prominent. The colour of the hair is a mixture of red, yellow, white, and black. These characters exhibit not the most alluring picture; and the manners of the animal are still more disgusting. He has no love but for himself, and possesses not a single social quality. He attacks and devours every animal he is capable of conquering, not excepting his own species. Even the instinct which draws him to the other sex, lasts only a few hours; at the end of which the female would not meet with a better fate, if she did not take the precaution of avoiding, or of killing him first. To these odious qualities, however, Nature has joined others, which, without rendering him more amiable, make him deserve a distinguished rank in the history of animals. He belongs to the small number of those which pass the winter in a torpid state, and he is the only European animal that is provided with cheek-pouches. His address in making a subterraneous abode, and the industry with which he lays up provisions, merit the attention of the curious.

The hamster inhabits not all soils or climates indifferently. He is neither found in very warm nor in very cold countries. As he lives upon grains, and dwells under the earth, stony, sandy, or argillaceous soils, are as inconvenient to him

as

as meadows, forests, and marshy grounds. He requires a soil which is easily pierced, and yet so tenacious as not to tumble down. He likewise chooses countries which abound in all kinds of grain, that he may not be obliged to seek his food at great distances, for which he is not well qualified. In Thuringia, the soil of which possesses all these qualities, the hamsters are more numerous than in any other country.

The habitation, which the hamster digs to the depth of three or four feet, consists of more or fewer apartments, according to the age of the animal. The principal chamber is lined with straw, and serves him for a lodging. The others are destined for the preservation of provisions, of which he amasses great quantities during the autumn. Each hole has two apertures; the one descends obliquely, and the other, through which the animal goes out and in, is perpendicular.

The holes of the females, who never live with the males, are somewhat different. In those where she brings forth, there is seldom above one chamber for provisions; because the short time the young remain with her requires not a great store of food. But, instead of one perpendicular hole, she makes seven or eight, to give free passage to her young. Sometimes the mother banishes her offspring, and continues to possess this hole; but she commonly digs another, and

and lays up as much provisions as the season permits her to collect.

The hamsters copulate about the end of April; when the males enter the apartments of the females, where they remain only a few days. If two males happen to meet in the same hole, a furious combat ensues, which generally terminates in the death of the weakest. The conqueror takes possession of the female, and both, though at every other period they persecute and kill each other, lay aside their natural ferocity during the few days their amours continue. They even mutually defend each other against aggressors. When a hole is opened at this period, and the female perceives that her husband is about to be carried off, she darts upon the ravisher, and makes him feel the fury of her vengeance, by inflicting deep and painful wounds.

The females bring forth twice or thrice every year. Their litter is never fewer than six, and oftener from sixteen to eighteen. The growth of these animals is very rapid. At the age of fifteen days, they already begin to dig the earth. Soon after, the mother banishes them from her habitation: So that, at the age of about three weeks, they are abandoned to their own management. The mother, in general, discovers little tenderness for her offspring. She who, in the season of love, defends her husband with courage, flies in the most dastardly manner when her family is threatened with danger. Her
only

only solicitude is to provide for her own safety. With this view, when pursued, she digs deeper into the earth, which she performs with an amazing quickness. The young would willingly follow her; but she is deaf to their cries, and even shuts the hole which she had made.

The hamster feeds upon all kinds of herbs, roots, and grains, which the different seasons produce. He even eats the flesh of such animals as he can conquer. As he is not adapted for long journies, his magazine is first stocked with the provisions which are nearest his abode. This is the reason why some of his chambers are frequently filled with one kind of grain only. When the harvest is reaped, he goes to a greater distance in quest of provisions, and carries every article he can find, without distinction, to his granary. To facilitate the transportation of his food, Nature has furnished him with two pouches in the inside of each cheek. On the outside, these pouches are membranous, smooth, and shining; and, in the inside, there are a great many glands, which continually secrete a certain fluid, to preserve their flexibility, and to enable them to resist any accidents which may be occasioned by the roughness or sharpness of particular grains. Each of these cheeks is capable of containing an ounce and a half of grain, which, on his return to his habitation, he empties, by pressing his two fore feet against his cheeks. When we meet a hamster having his cheeks filled
with

with provisions, it is easy to seize him with the hand, without the risk of being bitten; because, in this condition, he has not the free motion of his jaws. But, if he is allowed a little time, he soon empties his pouches, and stands upon his defence. The quantity of provisions found in the holes depends on the age and sex of the inhabitant. The old hamsters often amass a hundred pounds of grain; but the young and the females content themselves with a quantity much smaller. Their object in laying up provisions is not to nourish them during the winter, which they pass in sleep and without eating, but to support them after they awake in the spring, and previous to their falling into a torpid state.

At the approach of winter, the hamsters retire into their subterraneous abodes; the entry to which they shut up with great address. There they remain in perfect tranquillity, and feed on their provisions, till the frost becomes severe, when they sink into a torpid state, which resembles a profound sleep. When, during this period, the holes are opened, which we know by a small eminence of earth raised near the oblique passage formerly described, we find the hamster lying upon a bed of soft straw. His head is bended under his belly, between the two fore legs, and those behind rest upon his muzzle. The eyes are shut; and, when the eye-lids are forced open, they instantly close again. The members are stiff, like those of a dead animal,

and the whole body feels as cold as ice. Neither respiration nor any other sign of life can be perceived. When dissected in this situation, we see the heart alternately contracting and dilating. But this movement is so slow, that the pulsations exceed not fifteen in a minute; though, when the animal is awake, the heart beats a hundred and fifty strokes during the same time. The fat has the appearance of being coagulated. The intestines are as cold as the external parts of the body, and discover not the smallest irritability upon the application of spirit of wine or oil of vitriol. During this operation, the animal seems to feel very little. He sometimes opens his mouth, as if he wanted to respire. But his lethargy is too strong to admit of his wakening entirely.

The lethargy of the hamster has been ascribed solely to a certain degree of cold: This may be true with regard to the dormice and bats. But experience proves, that, in order to render the hamster torpid, he must also be excluded from all communication with the external air: For, when a hamster is shut up in a cage filled with earth and straw, and exposed in winter to a degree of cold sufficient to freeze water, he never becomes torpid. But, when the cage is sunk four or five feet under ground, and well secured against the access of air, at the end of eight or ten days he is equally torpid as if he had been in his own burrow. If the cage is brought up

to the surface, the hamster will awake in a few hours, and resume his torpid state when put below the earth. This experiment may be repeated with the same success, as long as the frost continues. We have a farther proof that the absence of the air is one of the causes of torpidness in the hamster: When brought up from his hole, in the coldest weather, and exposed to the air, he infallibly awakes in a few hours. This experiment succeeds equally either in the night or day, which proves that the light forms no part of the cause.

It is curious to observe the hamster passing from a torpid to an active state. He first loses the rigidity of his members, and then makes a profound respiration, but at long intervals. His legs begin to move, he opens his mouth, and utters disagreeable and rattling sounds. After continuing these operations for some time, he opens his eyes, and endeavours to raise himself on his legs. But all these movements are still reeling and unsteady, like those of a man intoxicated with liquor. He, however, reiterates his efforts, till he is enabled to stand on his legs. In this attitude he remains fixed, as if he meant to reconnoitre, and repose himself after his fatigues. But he gradually begins to walk, to eat, and to act in his usual manner. This passage from a torpid to an active state, requires more or less time, according to the temperature of the air. When exposed to a cold air, he sometimes
requires

requires more than two hours to awake, and, in a more temperate air, he accomplishes his purpose in less than one hour. It is probable that this change is produced imperceptibly, when the animal is in his hole, and that he feels none of the inconveniencies which arise from a sudden and forced reviviscence.

The life of a hamster is divided between the necessary cares of satisfying his natural appetites, and the fury of combating. He seems to have no other passion but that of rage, which induces him to attack every animal that comes in his way, without attending to the superior strength of the enemy. Ignorant of the art of saving himself by flight, rather than yield, he allows himself to be beat to pieces with a stick. If he seizes a man's hand, he must be killed before he quits his hold. The magnitude of the horse terrifies him as little as the address of the dog, which last is fond of hunting him. When the hamster perceives the dog at a distance, he begins with emptying his cheek-pouches, if they happen to be filled with grain. He then blows them up so prodigiously, that the size of the head and neck greatly exceeds that of the rest of the body. In fine, he raises himself on his hind legs, and, in this attitude, darts upon the enemy. If he catches hold, he never quits it but with the loss of his life. But the dog generally seizes him behind, and strangles him. This ferocious temper prevents the hamster from being at peace with



HAMSTER.

with any other animal. He even makes war against his own species, not excepting the females. When two hamsters rencounter, they never fail to attack each other, and the stronger always devours the weaker. A combat between a male and a female commonly lasts longer than between two males. They begin by pursuing and biting each other; then each of them retire to a side, as if to take breath; a little after, they renew the combat, and continue to fly and to fight till one of them falls. The vanquished uniformly serves for a repast to the conqueror.

four of its hair, which, instead of brown, was pale yellow. He has six thumbs, on each side of the fore-foot; while the marmot has only four toes and no thumb. In every other article, the resemblance is perfect; from which it is to be inferred, that these two animals are not of different species. The same observation applies to the marmot of Canada, which, by some travellers, has been called the *rodent*. He differs, however, from the marmot only by the tail, which is longer, and more bushy. It is not, however, Canada, the habitat of *Peromyscus*, and it is not the same animal, as the name and the tail, which, from the influence of different climates, is longer and more bushy.

It is not, however, Canada, the habitat of *Peromyscus*, and it is not the same animal, as the name and the tail, which, from the influence of different climates, is longer and more bushy.

The BOBAK *, and other MARMOTS.

THE Hamster has been called the *Straßbourg Marmot*, and the bobak the *Polish marmot*. But it is equally certain that the hamster is not a marmot, as it is probable that the bobak does belong to that species; for the bobak differs from the Alpine marmot only in the colour of his hair, which, instead of brown, is a pale yellow. He has also a thumb, or rather a claw on the fore-feet; while the marmot has only four toes and no thumb. In every other article, the resemblance is perfect; from which it is to be presumed, that these two animals are not distinct species. The same observation applies to the *monax*, or *marmot of Canada*, which by some travellers has been called the *whistler*. He seems to differ from the marmot only by the tail, which is longer, and more bushy. Hence the *monax* of Canada, the bobak of Poland, and the Alpine marmot, appear to be the same animal, which, from the influence of different climates,

* *Boback*; the Polish name of this animal.

Bobak; *Rzackinski, Hist. Nat. Pol. p. 233. Idem Aust. p. 327.*

Glis flavicans capite rufescens. . . Marmota Polonica; Brisson, regn. anim. p. 165.

mates, have undergone the varieties formerly mentioned. As this species prefers the coldest and most mountainous regions, and as it is found in Poland, Russia, and other parts of the North of Europe, it is not surprising that it should likewise be found in Canada, where it is only smaller*. Neither is this circumstance peculiar to the marmot; for all the animals common to both Continents are smaller in the New than in the Old World.

The Siberian animal, which the Russians call *Jevraschka*, is a species of marmot still smaller than the Canadian monax. It has a round head and a blunt nose. It has no external ears, and the auditory passages can only be discovered by removing the hair. The length of the body, including the head, exceeds not a foot; and the tail, which is round near the body, then flat, and truncated at the extremity, is but three inches long. The body of this animal is pretty thick, the hair is yellow, mixed with gray, and that on the end of the tail is almost black. The legs are short, those before being somewhat longer than those behind. The hind feet have five toes and five black claws, which are a little crooked; and the fore feet have only four. When these animals are irritated, or attempted to

* The Alpine and Polish marmots are a foot and a half long from the extremity of the muzzle to the origin of the tail; but the monax, or Canadian marmot, exceeds not fourteen or fifteen inches in length.

to be seized, they bite violently, and set up a sharp cry like the marmot. When they eat, they sit on their buttocks, and carry the victuals to their mouths with the fore paws. They come in season in spring, and bring forth in summer. The litter is generally five or six. They dig holes in the earth, where they pass the winter, and where the female brings forth and suckles her young. Though they have a great resemblance to the marmot, yet they appear to be of a different species; for, in the same parts of Siberia, there are genuine Polish or Alpine marmots, which the natives call *surok* *; and it has never been remarked that the two kinds mix, or produce an intermediate race.

The

* Voyage de Gmelin, tom. 2. p. 444.—In Tartary, says Rubruquis, there are plenty of marmots, which are called *sogur*. In winter they assemble together, to the number of twenty or thirty, in a large hole, where they sleep during six months; *Voyages en Tartarie*, p. 25.

Plate CCXXI.



A. Bell's sculp.

BOBAK.

8

THE JERBOAS.

JERBOA is a generic name employed to denote those animals which are remarkable for the disproportion between the hind and fore legs, the latter not exceeding the length of a mole's paws, and the former resembling the legs of a bird. In this genus, we are acquainted with four species, or distinct varieties: 1. The Tar-fier, or woolly Jerboa, formerly mentioned, which is certainly a particular species, because it has five toes on each foot, like those of a monkey. 2. The Jerboa, properly so called*, which

VOL. VII.

C c

has

* The Egyptian Jerboa, with thin, erect, and broad ears, full and dark eyes, and long whiskers. The fore legs are an inch long, with five toes on each, the inner, or thumb, being scarce apparent; but that, as well as the rest, furnished with a sharp claw. The hind legs are two inches and a quarter long, thinly covered with hair, and exactly resembling those of a bird; three toes on each foot, covered above and below with hair: The middle toe is the longest, and on each is a pretty long sharp claw. The length, from nose to tail, is seven inches and one quarter; the tail ten inches, terminated with a thick black tuft of hair; the tip white. The rest of the tail is covered with very short coarse hair. The upper part of the body is thin, or compressed sidewise. The part about the rump and loins is large. The head, back, sides, and thighs, are covered with long hair, ash coloured at the bottom, and pale tawny at the ends. The breast and belly are whitish, and the hair long and soft; *Pennant's Synops. of quad.*

p. 295.

Μυς διπλός; Theophr. opusc. p. 295. Ælian. hist. anim. lib. 10. c. 26.

has four toes on the fore feet, and three on the hind. 3. The Alagtaga*, whose legs are constructed like those of the jerboa, but which has five

Mus bipes Plinii; *Lib.* 15. c. 65.

Jerboa or *Terboa*, the Arabian name of this animal; *Shaw's Travels*, p. 248. *Texeira's Travels*, p. 21.

Gerbua; *Edward's Gleanings*, p. 219. *Plaidsted's Journal*, p. 59.

Mus jaculus, cauda elongata floccosa, palmis subpentadactylis, femoribus longissimis, brachiis brevissimis; *Linn. Syst. nat.* p. 86. *Hasselquist*, p. 198.

Gerboise; *Voyage de Paul Lucas*, tom. 2. p. 73.

* Siberian jerboa, with very long transparent narrow ears, long whiskers, and five toes on the fore feet, three on the hind feet, pointing forward, and a fourth behind, about an inch above the heel. The colour of the upper part of the body is tawny, and of the lower whitish. In form of body, legs, and tail, it agrees with the Egyptian jerboa; *Pennant's synopsis of quad.* p. 256.

Alagtaga is the Tartarian name of this animal, which, according to Messerschmid, signifies *an animal which cannot walk*. The word *alagtaga*, however, appears to be nearly the same with *letaga*, which is applied to the flying squirrel. Hence, I am inclined to believe, that *alagtaga*, as well as *letaga*, are generic rather than specific names, and that they denote *a flying animal*, especially as Strahlenberg, quoted by Gmelin, calls this animal the *flying hare*.

Cuniculus seu lepus Indicus, *utias* dictus; *Aldrov. de quad. digit. fig.* p. 395.—*Nota.* 1. Linnaeus and Edwards have improperly referred this figure to the jerboa, though, by the spur or fourth toe on the hind feet, which is very conspicuous, it belongs to the species of *alagtaga*. *Nota.* 2. Aldrovandus was wrong in denominating this animal *utias*, which is an American word, and probably the same with *agouti*.

Cuniculus pumilio faliens, cauda longissima; *Gmelin. Nov. Com. Acad. Petrop.* tom. 5. tab. 11. fig. 1.

Cuniculus pumilio faliens, cauda anomala longissima; *Briss. quad.* p. 103.

Flying hare; *Strahlenberg*; *Hist. Russ.* p. 370.

five toes on the fore feet and three on the hind, with a spur, that may pass for a thumb or fourth toe, much shorter than the others. 4. The *Daman Israel**, or *lamb of Israel*, which may be the same animal called *Mus longipes* by Linnaeus†, and which has four toes on the fore feet, and five on those behind.

The head of the jerboa has a great resemblance to that of the rabbit; but its eyes are larger, and its ears shorter, higher, and broader, in proportion to its size. The nose is flesh-coloured and naked; and the muzzle is thick and short. The opening of the mouth is very small; the upper jaw is very broad, and the under narrow and short. The teeth are like those of the rabbit, and the whiskers round the mouth are composed of long black and white hairs. The fore feet are extremely short, and never touch the ground, being used only as hands to convey victuals to the mouth. These hands have four fingers, armed with claws, and the rudiments of a fifth without any claw. The hind feet have only

* *Daman Israel*, lamb of the children of Israel; *Shaw's Travels*.

Animal quoddam pumilo cuniculo non dissimile, sed cuniculis majus quod *agnum filiorum Israel* nuncupant; *Prosp. Alpin. Hist. Egypt. lib. 4. cap. 9. 232.*

† *Mus longipes*, cauda elongata vestita, palmis tetradactylis, plantis pentadactylis, femoribus longissimis; *Linn. Syst. nat. p. 84.* The word *femoribus* is here improperly applied; for the metatarsi, or first bones of the foot alone, are extremely long in this animal.

only three toes, the middle of which is longest, and all three are armed with claws. The tail is three times longer than the body; it is covered with small stiff hairs, of the same colour with those on the back, and the extremity of it is garnished with longer, softer, and more bushy hair. The legs are naked and flesh-coloured, as well as the nose and ears. The top of the head and back are covered with reddish hair, and the flanks, the under part of the head, the throat, the belly, and the inside of the thighs, are white: Below the reins and near the tail, there is a large, black, transverse band, in the form of a crescent*.

The alagtaga is smaller than a rabbit. His ears are long, broad, naked, thin, transparent, and spread over with very conspicuous blood-vessels. The upper jaw is much larger than the under, but blunt and pretty broad at the extremity. It has large whiskers round the mouth. The teeth are like those of a rat. The eyes are large; and the iris and pupils are brown. The body is narrow before, broad and almost round behind. The tail is very long, not so thick as a small finger, and two thirds of it are covered with short stiff hair; on the last third the hairs are longer, more bushy, softer, and become longer toward the

* The following are the dimensions of this animal, as measured by Hasselquist: Magnitudo corporis ut in mure domestico majore. Mensuratio capit. poll. 1 corp. poll. $2\frac{1}{2}$ caud. spith. $1\frac{1}{2}$ post. ped. spith. $\frac{1}{2}$ anter. infra pollicem. Myst. longiss. poll. 3.

the extremity, where they form a kind of tuft, which is black at the beginning, and white at the end. The fore feet are very short, and have five toes; those behind are very long, and have only four toes, three of which are placed before, and the fourth, which is a thumb, stands at a distance from the others. All these toes are armed with claws, which are shorter in the fore than in the hind feet. The hair of this animal is soft, pretty long, yellow on the back, and white on the belly †.

From comparing these two descriptions, the first of which is taken from Edwards and Haffelquist, and the second from Gmelin, it appears that the jerboa and alagtaga resemble each other in a striking manner. The jerboa is only smaller than the alagtaga, and has but four toes on the fore feet, and three on the hind, without any spur; while the alagtaga has five toes on the fore feet, and three and a spur on the hind feet. But I suspect that this difference is not constant; for Dr Shaw, who has given a figure and description of a Barbary jerboa, represents it with

a

† The following are the dimensions of this animal, as measured by Gmelin: Longitudo ab extremo rostro ad initium caudae poll. 6; ad oculos poll. 1. Auricularum poll. $1\frac{1}{2}$; caudae poll. $8\frac{1}{2}$; pedum anteriorum ab humero ad extremos usque digitos poll. $1\frac{1}{2}$; pedum posteriorum a suffraginibus ad initium usque calcanei poll. 3; a calcaneo ad exortum digiti posterioris poll. 1; ab exortu digiti posterioris ad extremos unguis poll. 2. Latitudo corporis anterioris poll. $1\frac{1}{2}$, posterioris poll. 3, auricularum poll. $\frac{1}{2}$,

a spur or fourth toe on the hind feet; and Mr Edwards remarks, that he carefully examined two jerboas which he saw in England, and could discover no spur. Hence this character, which might serve as a specific distinction between the jerboa and alagtaga, by not being constant, answers no purpose, but marks rather the identity than the diversity of the species. Neither does the difference in size prove them to be distinct species: Edwards and Hasselquist may have described only young jerboas, and Gmelin an old alagtaga.

Two circumstances, however, render this matter still doubtful; the proportion of the tail, which is much larger in the jerboa than in the alagtaga, and the difference of the climates which they inhabit. The jerboa is common in Circassia*, Egypt†, Barbary, and Arabia; and the alagtaga in Tartary, along the Wolga, and as far as Siberia. It is seldom that the same animal inhabits climates so different; and, when it does happen,

* In Circassia, Persia, Arabia, and the environs of Babylon, there is a kind of field-mouse, called *jerbuach* in the Arabic language, which is nearly of the size and colour of the squirrel.——When it leaps, it darts five or six feet above the ground.——It sometimes quits the fields, and takes up its abode in the houses; *Voyage d'Olearius*, p. 177.

† In Egypt, I saw two small animals, that ran very quickly on their hind feet, which were so long that the creatures seemed to be mounted on stilts. These animals burrow like rabbits. I carried off seven of them; two of which I brought to France, where they lived in the royal menagerie two years; *Voyage de Paul Lucas*, tom. 2. p. 74.

happen, the species undergoes great changes : This we presume to be the case with the jerboa, of which, notwithstanding these differences, the alagtaga seems to be only a variety.

These animals generally conceal their hands or fore feet among the hair; so that, at first sight, they seem to have only two feet. In transporting themselves from place to place, they do not walk, or advance one foot after another, but leap nimbly to the distance of three or four feet. When reposing themselves, they sit on their knees, and sleep only during the day. They eat grain and herbage, like the hare. Their dispositions are mild, and yet they can never be tamed beyond a certain point. They dig holes in the earth like the rabbits, and in a much shorter time. About the end of summer, they lay up herbage in their magazines, where, in cold countries, they pass the winter.

As we have had no opportunity of dissecting this animal, we shall subjoin the remarks of M. Gmelin upon its internal structure †.

With

† Oesophagus, uti in lepore et cuniculo, medio ventriculo inseritur; intestinum caecum breve admodum sed amplum est, in processum vermiformem, duos pollices longum abiens. Choledochus mox infra pylorum intestinum subit. Vesica urinaria citrina aqua plena; uteri nulla plane distinctio; vagina enim canalis instar sine ullis artificiiis in pubem usque protensa in ano mox cornua dividitur, quae ubi ovariis appropinquant multas inflexiones faciunt, et in ovariis terminantur. Penem masculus habet satis magnum, cui circa vesicae urinae col-
lum

With regard to the daman, or lamb of the children of Israel, which seems to be a kind of jerboa, because its fore legs are remarkably shorter than the hind, having never seen this animal, we cannot do better than copy the remarks of Dr Shaw, who had an opportunity of comparing it with the jerboa, and speaks of them as two distinct species. 'The daman,' says this author, 'is likewise an animal of Mount Libanus, though common in other places of this country. It is a harmless creature, of the same size and quality with the rabbit; and with the like incurvating posture and disposition of the fore teeth. But it is of a browner colour, with smaller eyes, and a head more pointed, like the marmots. The fore feet likewise are short, and the hinder are nearly as long in proportion as those of the jerboa. Though this animal is known to burrow sometimes in the ground; yet, as its usual residence and refuge is in the holes and clefts of the rocks, we have so far a more presumptive proof, that this creature may be the saphan of the Scriptures, than the jerboa. I could not learn why it was called daman Israel,

lum vesiculæ seminales unciam cum dimidio longae, graciles, et extremitatibus intortae adjacent. Foramen aut sinus quosdam inter anum et penem, aut inter anum et vulvam nullo modo potui discernere, licet quasvis in indagatione ista cautelas adhibuerim.——Cuniculi Americani, porcelli pilis et voce Marcgr. Fabrica internarum partium ab hoc animali non multum abludunt; *Gmelin, Nov. Com. Petrop. tom. 5. art.*

rael, *i. e.* Israel's lamb, as those words are interpreted *.' Prosper Alpinus, who mentioned this animal before Dr Shaw, says, that its flesh makes excellent eating, and that it is larger than the European rabbit. But this last fact seems to be suspicious; for Dr Shaw has omitted this passage of Prosper Alpinus, though he transcribes all the other remarks of that author.

• Shaw's travels, p. 248.

Vol. VII.

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THE ICHNEUMON*.

IN Egypt, the ichneumon is domestic like the cat in Europe, and preys upon mice and rats.

* Ichneumon weasel, with bright flame-coloured eyes, small rounded ears, almost naked, nose long and slender, and the body thicker than that of others of this genus. The tail is very thick at the base, tapering to a point. The legs are short; and the hair is hard and coarse. The colour varies in different animals from different countries; in some it is alternately barred with dull yellowish brown and white; in others, pale brown and mouse-coloured; so that the animal appears mottled. The throat and belly are of a uniform brown. Beneath the tail is an orifice, not unlike that of a badger. It differs in size, from twenty-four to forty-two inches in length, from the tip of the nose to the end of the tail; *Pennant's Synops. of quad. p. 226.*

Ichneumon; *Arist. hist. anim. lib. 9. c. 6.* *Oppian. Cyneg. III. 497.*
Ichneumon; *Plin. lib. 8. c. 24.*

L'Ichneumon que les Egyptiens nomment Rat de Pharaon; *Belon, obs. p. 95.* *Prosp. Alpin. tom. 1. p. 234.* *Gesner. quad. p. 566.* *Raii Syn. quad. p. 202.* *Shaw's travels, p. 249. 376.*

Mustela Egyptiaca; *Klein, quad. p. 64.*

Meles ichneumon, digitis mediis longioribus, lateralibus aequalibus, unguibus subuniformibus; *Hasselquist, Itin. p. 191.*

Ichneumon; *Mus Pharaonis* vulgo; *Briffon, quad. p. 181.*

Viverra ichneumon, cauda e basi incrassata, sensim attenuata, pollicibus remotiusculis; *Linn. Syst. Nat. p. 63.*

Quil, vel quispelé; *Garcia Arom. p. 214.* *Raii synops. quad. p. 197.*

Viverra mungo; *Kempfer Amoen. p. 574.*

De Monghos; *Valentin. Amboin.*

Serpenticida,

rats *. But his appetite for flesh is still more violent, and his instinct more extensive than those of the cat; for he hunts and eats, with equal avidity, birds, quadrupeds, serpents, lizards, insects, and, in general, every animated being. His courage is equal to the vehemence of his appetite. He dreads neither the rage of the dog nor the malice of the cat. He is not afraid even of the bite of serpents, whom he pursues and kills; and, when he begins to feel the effects of their poison, he goes in quest of an antidote, and particularly of a root †, which the Indians

Serpenticida, sive Moncus; *Rumph. herb. Amboin. App. p. 69. tab. 28.*

Indian Ichneumon; *Edwards, p. 199.*

Ichneumon, seu vulpecula Ceilónica; *Seb. Mus. tom. 1. p. 66. tab. 41. fig. 1.*

La Mangouste; *Buffon.*

Viverra Indica, ex griseo rufescens; *Briffon, quad. p. 177. Rati Syn. quad. p. 198.*

Ichneumon, sive lutra Egypti; *Aldrov. de quad. digit. p. 298.*

* Mihi ichneumon fuit utilissimus ad mures ex meo cubiculo fugandos . . . unum alui à quo murium damna plane cessarunt, siquidem quotquot offendebat interimebat, longeque ad hos necandos fugandosque fere est ichneumon utilior; *Prosp. Alp. Descript. Egypt. lib. 4. pag. 235.*

† Primum antidotum . . . radix est plantae Malaice *Hampaddu-Tanab*, id est *Fel terrae* dicta à sapore amarissimo . . . Lusitanis ibidem *Raja* seu radix *mungo* appellata à mustela quadam seu viverra India *mungustia* . . . appellata, quae radicem monstrasse, et ejus usum . . . prima . . . prodidisse creditur . . . Indi igitur . . . praecipue qui Sumatram et Javam incolunt, sive usum à mustela edocti sint, sive casu quodam invenerint radicem pro explorato habent antidoto; *Koempfer, Amoenit. pag. 574.* — In India, there is a root which produces

Indians call by his name, and alledge that it is one of the most powerful and certain remedies against the bite of the viper or asp. He eats the eggs of the crocodile, as well as those of hens and other birds. He likewise kills and eats the young crocodiles *, though they are very strong soon after they issue from the egg; and, as fable is always a concomitant of truth, it has been alledged, that, in consequence of this antipathy to the crocodile, the ichneumon enters into the crocodile's body while asleep, and never leaves him till his bowels are entirely devoured.

Naturalists have imagined that there are different species of ichneumons, because they vary in

ces neither trunk, branches, nor leaves. It is called *chiri*, a name derived from that of the animal, which alone knows where to find this root. The animal is as large as a martin, which it also resembles in figure, except that it is more corpulent. It is of a dusky colour, and the hair is hard, crooked, and bristly, like that of the wild boar, but not so long. The tail is fleshy and smooth, like that of the martin. This animal has a remarkable antipathy to serpents, for whom he perpetually lies in ambush. . . . The hunters tell us, that, when bit by a serpent, he goes in quest of the root mentioned above, either to cure, or to preserve himself against the effects of the poison. . . . This root is regarded as the best antidote which India produces; *Voyage de P. Vincent Maris*.

* The ichneumon, or rat of Pharaoh, is a small kind of wild hog. It is a beautiful animal, easily tamed, and its hair is bristly like that of the porcupine. It is an enemy to all other rats, and has a particular antipathy to the crocodile, whose eggs it devours, and boldly attacks the young, by seizing them by the tail, instead of the head; *Descript. de l'Egypte, par Maillet*, p. 34.

in size and colour. But, if we consider that they are often reared in houses, and must, like other domestic animals, undergo changes, we will be easily persuaded, that the diversities in colour and size are only simple varieties, and are not sufficient to constitute distinct species; especially as, in two ichneumons which I saw alive, and in several stuffed skins, I examined the intermediate shades both of colour and size, and remarked, that not one of them differed from the others by any evident and constant character. It only appears, that, in Egypt, where the ichneumons are in a manner domestic, they are larger than in India, where they are wild *.

The

* This ichneumon, says Edwards, came from the East Indies, and was very small. I saw another which came from Egypt, and was more than double the size. . . . Beside the size, the only other difference between these two ichneumons was, that the Egyptian kind had a small tuft at the extremity of the tail, while that of the Indian kind terminated in a point. I believe they are two distinct species; because that of India, which was comparatively so small, had acquired its full growth; *Edwards, p. 199. Nota.* These differences are not sufficient to constitute two species, especially as between the largest and smallest, that is, from thirteen to twenty-two inches in length, there are intermediate sizes of fifteen and sixteen inches. Seba, who has given a figure and description (*vol. 1. p. 66. tab. 41.*) of one of these small ichneumons, which he had alive, and was brought from Ceylon, remarks, that it was very mischievous, and could not be tamed. This difference of disposition might indicate a difference of species. But it has so perfect a resemblance to those we have already mentioned, that it is unquestionably the same animal. Besides, I saw one of these small ichneumons, which was so tame, that
its

The nomenclators, who perpetually blunder with regard to species, have differed widely as to the ichneumon. Linnæus first made it a badger, and afterwards a ferret. Hasselquist, following the first lessons of his master, likewise made it a badger. Klein and Brisson have placed it among the weasels. Others have made it an otter, and others a rat. I mention these notions for the sole purpose of showing the inconsistencies and contradictions that arise from what are called *generic names*, which are generally false, arbitrary, and equivocal *.

The

its master (M. le President de Robien) carried it always in his hat, and exhibited to the whole world the mildness and good nature of this animal.

* Hasselquist finishes his long, dry, and uninteresting description of the ichneumon with these words: 'Galli, in Egypto conversantes, qui omnibus rebus quas non cognoscunt, sua imponunt nomina ficta, appellarunt hoc animal *rat de Pharaon*. Quod sequuti qui Latine relationes de Egypto dederunt, *Alpin*, *Belon*, murem Pharaonis effinxerunt.' If this man had read Belon and Alpinus, whom he quotes, he would have perceived that it was not the French who gave the appellation of *Pharaoh's rat* to the ichneumon, but the Egyptians themselves, and would not, on that account, have taken occasion to revile our nation. But it is not surprising to find petulance and pedantry in the works of a school-boy. In a word, his descriptions of the ichneumon, of the cameleopard, and of some other animals, can never serve any other purpose than to mislead those who take the disagreeable and irksome trouble of reading them: 1. Because they are unaccompanied with figures, which a multitude of ill chosen words can never supply: 2. Because these words are mostly barbarous Latin, or rather no language whatever: 3. Because the method observed in descriptions of this kind, is only a rote, which every
man

The ichneumon loves the banks of rivers. During inundations, he retires to the high grounds, and often approaches the habitations of men in quest of prey. In walking, he makes no noise, and varies his gait according to circumstances. Sometimes he carries his head high, contracts his body, and raises himself on his limbs. At other times, he has the air of creeping and of lengthening his body like a serpent. He often sits on his hind legs; and still more frequently

man can follow, and requires neither genius nor knowledge: 4. Because, by the minuteness of the description, the remarkable and distinctive characters of the animal described are confounded with the more obscure, unimportant, and equivocal marks: 5. In fine, because the numerous relations, and precarious combinations, with which we are obliged to load the memory; render the labour of the reader greater than that of the author, and leave both as ignorant as they were before. What proves that, in rotes of this nature, neither reading nor knowledge are necessary, is, 1. The false imputation thrown on the French nation with regard to *Pharaoh's rat*: 2. The blunder he commits in ascribing to this animal the Arabian name *Nems*, which signifies the ferret, and not the ichneumon. To avoid this error, an acquaintance with the Arabic language was unnecessary; it was enough to have read the travels of those who had gone before him in the same country; 3. The omission of essential characters, while he enlarges without measure upon those which are indifferent. He describes, for example, the cameleopard as minutely as the ichneumon; but he omits the most important character, namely, whether the horns are permanent, or fall off annually: Among a thousand useless words, we find not the one which is most necessary, and, from his description, we cannot discover whether the cameleopard belongs to the stag or ox kind. But we have dwelt too long on a criticism which every man of sense must make, when works of this nature fall into his hands.

frequently darts like an arrow on his prey. His eyes are vivacious and full of fire. His aspect is beautiful, his body very agile, his limbs short, his tail thick and very long, and his hair rude, and often curled. Both male and female*, independent of the natural passages, have a remarkable aperture, a kind of pouch in which an odoriferous liquor is secreted. The ichneumon is said to open this pouch in order to refresh himself when too warm. His sharp muzzle and narrow mouth prevent him from seizing large objects. But the defects of his weapons and strength, he supplies by agility and courage. He easily worries a cat, though larger and stronger than himself. He often combats with dogs, and, however large, forces respect from them.

This animal grows quickly, and lives but a short time†. They are numerous in all the southern

* The inhabitants of Alexandria rear an animal called *ichneumon*, which is a native of Egypt. They tame and keep it in their houses, like a cat or dog. The vulgar call it the *rat of Pharaoh*. The peasants bring these animals, when young, to Alexandria, where they are kept in the houses, on account of their hunting rats, serpents, &c. This animal is very cunning in watching its prey. . . . He feeds indifferently on all living creatures, as beetles, lizards, cameleons, all kinds of serpents, frogs, rats, and mice. He is fond of birds and poultry. When provoked, he erects his hair. . . . He has a peculiar mark, a large aperture surrounded with hair, near the anus, resembling the female organ, which he opens when too warm; *Belon, Obs. p. 95.*

† *Feles et ichneumon tot numero pariunt quot canes, vescunturque eisdem, vivunt circiter annos sex; Arist. Hist. anim. lib. 6. cap. 35.*

southern regions of Asia*, from Egypt to Java; and they appear to exist in Africa, as far as the Cape of Good Hope†. But they cannot be easily reared, nor preserved in our temperate climates. Whatever care be taken of them, the wind incommodes, and the frost kills them. To avoid both, and preserve their heat, they roll themselves up and conceal their head between their thighs. The ichneumon has a small soft voice, a kind of murmur, and its cry never becomes sharp unless when struck or irritated. This animal was held in great veneration among the antient Egyptians, and still merits protection, on account of the numbers of noxious animals

VOL. VII. E e which

* *Mungos alunt rura calentis Asiae omnis, usque ad Gangem, etiam in iis regionibus in quibus radix mungo numquam germinavit; Koempf. Amoenit. p. 574.*—The ichneumon is a small beautiful animal, shaped nearly like our French weasels . . . but of a colour incomparably finer. . . . The white and black predominate, and there is a kind of red, which constitutes the shade between the two. The hair of the tail is of the same colour, but longer than that of the body. The head is covered with short smooth hair. Its eyes are large, and its ears short and rounded. This ichneumon was two feet and a half long from the nose to the extremity of the tail. . . . It was brought from the kingdom of Calicut to France, in a vessel belonging to our squadron. It lived five months in Paris, and became very familiar; *Curiosit. de la Nat. et de l'Art, p. 211.*

† The ichneumon is of the size of a cat, and shaped like a shrew-mouse. . . . Its whole body is covered with long, stiff hair, variegated with black, white, and yellow. This animal, which is common in the fields of the Cape, is a great destroyer of serpents and birds; *Descript. du Cap de Bonne-Esperance, par Kolbe, tom. 3. ch. 5.*

which it destroys, and particularly the crocodiles, whose eggs it knows how to find, though concealed in the sand. The crocodiles lay such a number of eggs *, that their multiplication would be extremely formidable, if the ichneumon did not destroy them,

THE

* The ichneumon is of great service to Egypt, because he destroys the crocodile's eggs, wherever he can meet with them. It was for this reason that the antient Egyptians performed a kind of religious adoration to him; *Voyage de Paul Lucas, tom. 3. p. 203.*—The antient Egyptians justly revered the ichneumon, or rat of Pharaoh. It is said, that, out of four hundred eggs, which the female crocodile lays at a time, to save a few of them from the fury of this mortal enemy, she is obliged to transport them to some small islands, after the retiring of the Nile; *Descript. de l'Egypte, par Maillet, tom. 2. p. 129.*

Plate CCXXII.



A. Bellin del.

MANGOUSTE.

ABCD

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THE FOSSANE*.

BY some travellers the fossane is called the *Genet of Madagascar*, because it resembles the genet in colour, and some other articles. But it is constantly smaller, and has not the odoriferous pouch, which is an essential character of the genet. As we were uncertain as to this fact, we wrote to M. Poivre, who had sent us a stuffed skin, and who obliged us with the following answers: 'Lyon, July 19. 1761.
' The fossane which I brought from Madagascar had the manners of our martin. The inhabitants of the island assured me, that the genitals of the male, when in season, had a strong odour of musk. When the skin was stuffed at the royal garden, I examined it attentively, and could perceive no pouch or smell of musk. I reared a similar animal in Cochinchina, and another in the Philippine islands. Both of them were males, and they
' became

* Fossane weasel, with a slender body, rounded ears, and black eyes. The body and legs are covered with cinereous hair, mixed with tawny. The sides of the face are black. From the hind part of the head, towards the back and shoulders, four black lines extend. The shoulders, sides, and thighs, are black, and the tail is annulated with black; *Pennant's synopsis of quadr. p. 237.*

Fossa or *Fossane*, the name of this animal at Madagascar, which we have adopted.

‘ became a little familiar. They were very
 ‘ young, and I kept them only two or three
 ‘ months. I found no pouch in the part you
 ‘ mentioned ; and I only perceived that their
 ‘ excrements had an odour similar to those of
 ‘ our martin. They eat flesh and fruits ; but
 ‘ they preferred the latter, and showed a deci-
 ‘ ded taste for bananas, upon which they sprung
 ‘ with avidity. This animal is very wild,
 ‘ and difficult to tame. Though taken when
 ‘ young, his air and character were always fe-
 ‘ roocious, which seemed to be uncommon in
 ‘ an animal that feeds spontaneously on fruits.
 ‘ The eye of the fossane is a large black globe,
 ‘ which gives it a mischievous aspect.’

We rejoice in this opportunity of expressing our gratitude to M. Poivre, who, from his attachment to natural history, and his friendship to those who cultivate that science, has adorned the royal cabinet with a great number of rare and valuable articles.

It appears to us, that the animal called *Berbé* in Guiney, is the same with the fossane, and, consequently, that this species exists in Africa as well as in Asia. ‘ The berbé has a sharper
 ‘ muzzle and a smaller body than the cat ; and
 ‘ is spotted like the civet *.’ We have no animal to which those characters apply so well as to the fossane.

* Voyage en Guinée, par Bosman, p. 256.

THE VANSIRE.

THOSE who mention this animal have taken it for a ferret, to which it has a great resemblance. But it differs from the ferret by such characters as justify us in considering it as a distinct species. The vansire has twelve grinding teeth in the upper jaw, and the ferret only eight; and, though each of these animals have ten grinders in the under jaw, they neither resemble one another in figure nor situation. Besides, the colour of the vansire differs from that of all other ferrets; though these last, like all domestic animals, vary so much from each other in colour, that even the male differs from the female.

To us it appears, that the animal mentioned by Seba † under the denomination of the *Java weasel*,

• The Madagascar weasel with short ears. The hair on the whole body and tail is brown at the roots, and barred above with black and ferruginous. The length from nose to tail is about fourteen inches, and that of the tail, to the tip of the hairs at the end, near ten; *Pennant's synopsis of quadrupeds*. p. 224.

Vansire, derived from *vobang shira*, the name of this animal in Madagascar. The province of Balta, in the kingdom of Congo, furnishes an infinity of fine fables, called there *Insfire*; *Hist. gen. des Voyages*, tom. 5. p. 87. *Nota*. There are no fables in Congo; and the similarity of the name leads us to think that the *insfire* of Congo may be the *vansire* of Madagascar.

† *Mustela Javanica*: Ab incolis Javae *Koger-angan* vocatur; *Seba*, vol. 1. p. 77. tab. 48. fig. 4.

weasel, called by the natives *Koger-angan*, and afterwards by Briffon †, the *ferret of Java*, may be the same animal with the vansire; at least, it makes a nearer approach to the vansire than any other animal. But Seba's description is not sufficiently complete to enable us to form an explicit judgment. His description we have added in the notes †, that the reader may compare it with ours.

The

† *Mustela supra rufa, infra dilute flavæ, cauda apice nigricante.*—*Viverra Javanica.* Le furet de Java; *Briff. Regn. anim. p. 245.*

† *Javanica hæc mustela, hic representata, collo et corpore est brevioribus quam nostras; caput tegentes pili obscure spadicei sunt, rufi qui dorsum, dilute vero flavi qui ventrem vestiunt, cauda interim in apicem acutum et nigricantem definientē; Seba, vol. 1. p. 78.*

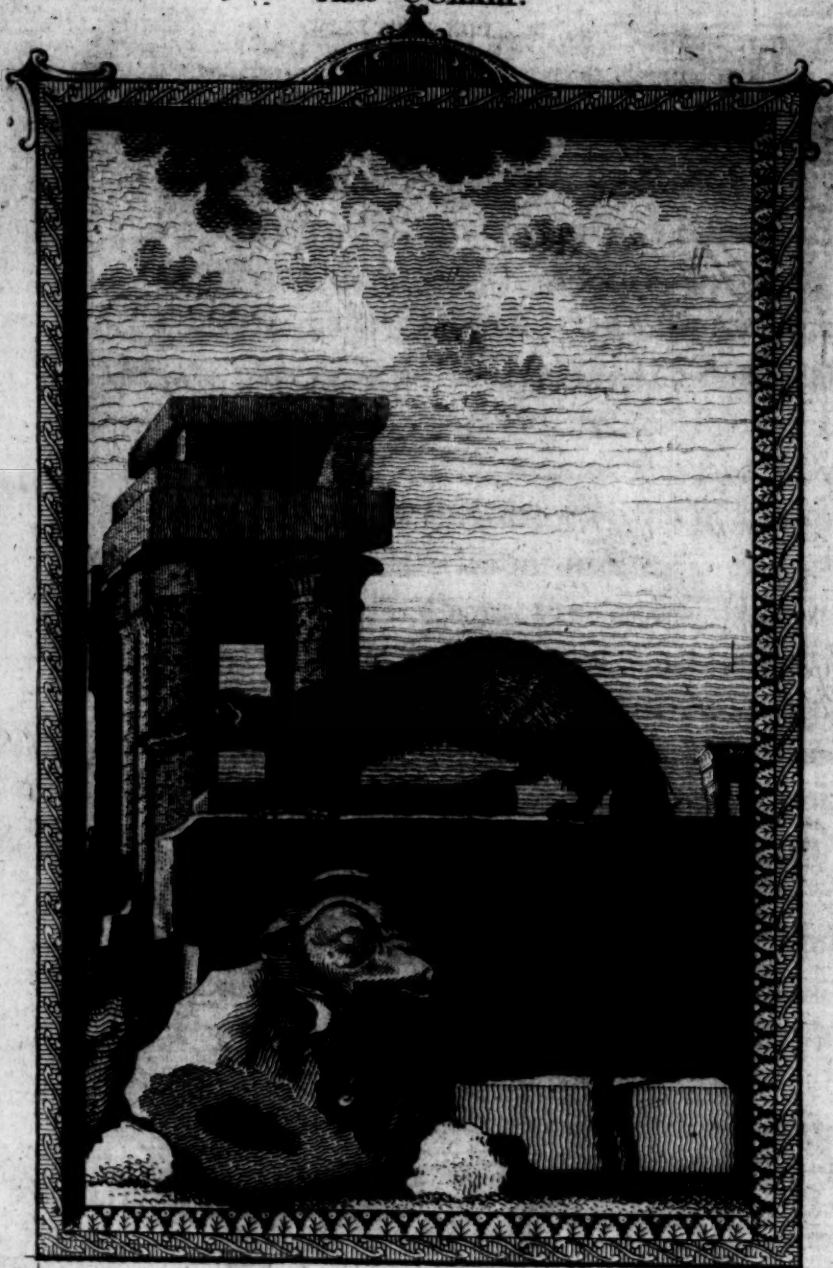
The muzzle of the iris a deep yellow. The body is very sharp, appeared not to have any long hair, which is a mixture of dark brown and a dirty white, and gives it a resemblance

SUPPLEMENT
The vanfire, as formerly remarked, is a native of Madagascar and the interior parts of Africa. It has a great resemblance to the ferret, except in the number and form of the teeth, and in the tail; which is much longer in the vanfire than in our ferret. We here give the figure of an animal which was transmitted to us from the Eastern part of Africa, under the denomination of *Neipse*. From its figure as well as its name, I know it to be a species of ferret; for *nems* or *nims* is the name of the ferret in the Arabic language. These Arabian ferrets, or *nems*, have a greater resemblance to the vanfire than to our European ferrets. M. de Séve gives the following description of the *nems*.

‘ The *nems*, from his figure and flexibility, is a genuine ferret. When he walks, he lengthens his body, and appears to have very short legs. The individual under consideration was a male, and about thirteen inches and a half long from the muzzle to the anus, and the length of the tail one foot. The fore part of the body is five inches and a half high, and the hind part six inches and a half. The ears are naked, and of the same figure with those of the common ferret. The eye is vivacious, and the co-

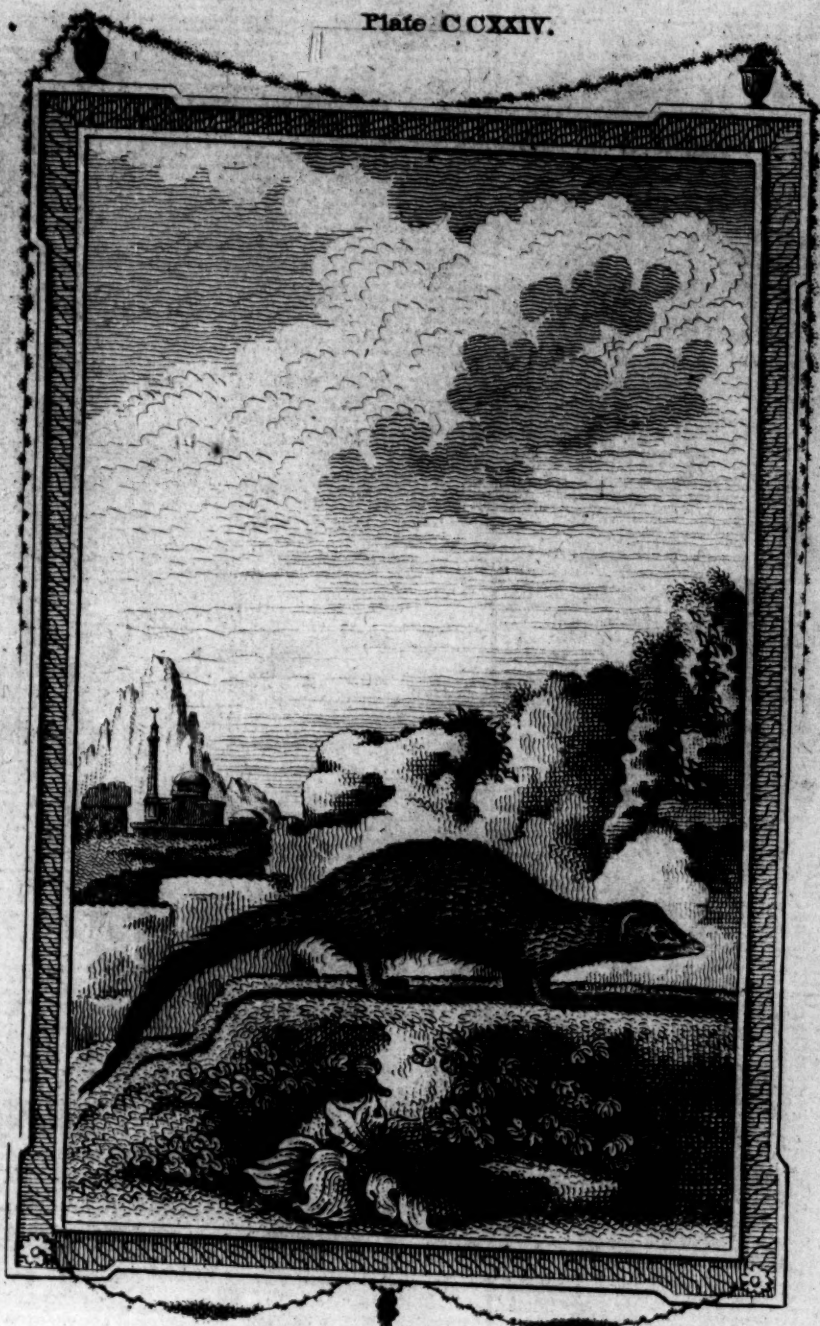
‘ lour of the iris a deep yellow. The muzzle,
‘ which is very sharp, appeared not to have any
‘ whiskers. The whole body is covered with
‘ long hair, which is a mixture of dark brown
‘ and a dirty white, and gives it a resemblance
‘ to the silvery rabbit. The hair on the belly is
‘ of a bright yellow colour, without any mix-
‘ ture. The ground colour on the head, and
‘ round the eyes, is clear and yellowish: On the
‘ nose, cheeks, and other parts of the face where
‘ the hair is short, a tincture of brown, more or
‘ less deep, prevails without mixture, and gra-
‘ dually loses itself above the eyes. The legs
‘ are covered with short hair, of a deep yellow
‘ colour. On the paws there are four toes, and
‘ a small one behind. The claws are small and
‘ black. The tail, which is more than double
‘ the length of that of our ferrets, is very thick
‘ at its origin, terminates in a point, and is co-
‘ vered with hair similar to that on the body.
‘ This animal, according to the information of
‘ the boy who has the charge of it, never drinks.’

The



At Bell sculpt.

GREAT MANGOUSTE.



A. Bell Sculp. t.

NEMS.

Plate CCXXV.



A. Bell, sculp.

FOSSANE.

8
S

Plate CCKXVL



J. Bell del.

VANSIRE.

1947-1948

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 1, 1801. It is a formal address, and it begins with the words "I have the honor to acknowledge the receipt of your letter of the 28th inst. and in reply to inform you that the same has been forwarded to the proper authorities for their consideration."

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1. The first part of the document is a list of names and addresses, which are arranged in a columnar format. The names are written in a cursive script, and the addresses are written in a more formal, printed style. The list is organized into two main sections, with the first section containing names and addresses, and the second section containing names and addresses. The names are written in a cursive script, and the addresses are written in a more formal, printed style. The list is organized into two main sections, with the first section containing names and addresses, and the second section containing names and addresses.

The MAKIS*, or MAUCAUCO'S.

AS the name *maki* has been given to several animals, we could only employ it as a generic term, under which we shall comprehend three animals of the same genus, but of distinct species. These three animals have long tails, and feet like those of the monkey; but their muzzle is long, like that of the martin, and they have six cutting teeth in the under jaw, while the

* Ring-tailed maucauco with the end of the nose black, erect ears, white face, and black circles round the orbits. The hair on the top and hind part of the head is of a deep ash-colour; the back and sides are of a reddish ash-colour; the outsides of the limbs are paler; and the belly and insides of the limbs are white. All its hair is very soft, close, fine, and erect, like velvet. The tail is twice the length of the body, and marked with numbers of regular rings of black and white; and, when sitting, it is twisted round the body, and brought over its head. The nails are flat, particularly those of the thumbs of the hind feet. The inside of the hands and feet are black. It is of the size of a cat; *Pennant's synopsis, of quad.* p. 137.

The word *Maki* seems to be derived from *mocok* or *maucuc*, which is the name of those animals in Mosambique, and in the islands adjacent to Madagascar.

Vari; *Flacourt. Hist. Madag. p. 153.*

Moc-wk; *Grose's voy. 41.*

Maucauco; *Edwards, hist. of Birds, p. 197.*

Prosimia cinerea, cauda cincta annulis alternatim albis et nigris; Brisson. quad. p. 157.

Lemur catta, caudatus, cauda albo nigroque annulata; Linn. f. nat. p. 45. Osbeck's voy. vol. 2. p. 168.

the monkeys have only four. The first of these animals is the mococo or maucauco, commonly known by the name of the ring-tailed *maki*. The second is the Mongous, commonly called the *Brown Maki**. But this denomination is improper; for some individuals are all brown, and others have their cheeks black, and their feet yellow. The third is the *Vari*†, by some called the

* The woolly maucauco, with orange-coloured irides, short rounded ears, end of the nose black, eyes lodged in a circle of black, and the space between them of the same colour. The rest of the nose and lower sides of the cheeks are white. When in full health, the whole upper part of the body is covered with long, soft, and thick fur, a little curled or waved, and of a deep brownish ash-colour. The tail is very long, and covered with the same sort of hair, and of the same colour. The breast and belly are white, and the hands and feet naked and dusky. The nails are flat, except that of the inner toe of the hind feet. It is of the size of a cat. The paws are sometimes white or yellow, and the face wholly brown; *Pennant's synops. of quad. p. 136.*

Mongous, the name of this animal in the East Indies.

Macasser fox; *Nieuboff's voy. p. 361.*

Simia sciurus, lanuginosus, fuscus; *Petiver Gazophyl. tab. 17. fig. 5.*

The mongooz; *Edw. gleanings, p. 12.*

Prosimia fusca, naso pedibusque albis; *Briffon. quad. p. 156.*

Lemur mongooz, caudatus, griseus, cauda uni colore; *Linn. sist. nat. p. 44.*

† The ruffed maucauco, with orange-coloured irides, long hair round the sides of the head, standing out like a ruff, and a long tail. The colour of the whole animal is black, but not always, being sometimes white, spotted with black; but the feet are black. It is rather larger than the ring-tailed species; *Pennant's synops. of quad. p. 138.*

Vari

the *Pied Maki*. But this denomination is ill applied; for, besides the pied variety, some individuals are entirely black, and others entirely white. These animals are all natives of the Eastern regions of Africa, and particularly of Madagascar, where they are very numerous.

The Maucauco is a beautiful animal. His aspect is agreeable, his figure elegant, and his hair always neat and glossy. He is remarkable for the largeness of his eyes, the height of his hind legs, which are much longer than those before, and his large and handsome tail, which is always erected, always in motion, and garnished with thirty alternate rings of black and white, well marked and separated from each other. His manners are gentle, and, though he has a great resemblance to the monkeys, he possesses none of their malicious dispositions. In a state of liberty, the maucauco's live in society, and they are found in Madagascar in troops of thirty or forty *. In a domestic state, the prodigious rapidity of their movements renders them incommodious: It is for this reason alone that they are generally chained; for, though extremely

VOL. VII.

F f

active

Vari or varicosi; *Flacourt. hist. Madag. p. 153. Cauche's voy. p. 53.*

Black maucauco; *Edw. Gleanings, p. 13.*

Lemur macaco, caudatus, niger, collari barbata; *Linn. hist. nat. p. 44.*

* The vari's, whose tails are barred with black and white, go in troops of thirty, forty, or fifty: They resemble the varicosi's; *Voyage de Flacourt, p. 154.*

active and vivacious, they are neither mischievous nor ferocious. They tame to such a degree as to go out and return, without any danger of running off. Their gait is oblique, like that of all animals which have hands instead of feet. The maucauco leaps more gracefully than he walks. He is a silent animal, uttering only a short acute cry when surprised or irritated. He sleeps in a sitting posture, with his muzzle resting on his breast. His body is not thicker than that of a cat, but it is longer; and the height of his legs gives him the appearance of being larger than he really is. His hair, though very soft to the touch, stands always erect. In the male maucauco, the organs of generation are small and concealed; but those of the mongous, or woolly maucauco, are disproportionally large, and very apparent.

The mongous is smaller than the maucauco; his hair is likewise silky, pretty short, and somewhat curled. His nose is larger than that of the maucauco, and resembles that of the vari. I had a mongous in my possession for several years, which was altogether brown. It had yellow eyes, a black nose, and short ears. It amused itself with eating its own tail, and actually destroyed the last four or five vertebrae. This animal was extremely dirty, and so troublesome that we were obliged to chain him. Whenever he could make his escape, he went into the neighbouring shops in quest of fruits, sugar, and sweetmeats,

sweetmeats, and opened the boxes which contained them. It was difficult to seize him, and he bit cruelly even those with whom he was best acquainted. He uttered a low grunting noise, almost perpetually; and, when tired of being alone, he croaked like a frog, and so loud as to be heard at a great distance. This mongous was a male, and his testicles were extremely large in proportion to the size of his body. He was fond of the she-cats, and even satisfied his desires, without any intimate union: His embraces were, of course, ineffectual. He dreaded cold and moisture; he never departed from the fire, and stood on end to warm himself. He was fed with bread and fruits. His tongue was rough, like that of a cat; and, when permitted, he licked a person's hand till it was inflamed, and often finished this operation with a severe bite. The cold of the winter 1750 killed him, though he never quitted his station near the fire. His movements were extremely brisk, and sometimes petulant. He often slept during the day; but his slumbers were so light, that the smallest noise awaked him.

In this species there are several varieties, both in colour and size: The mongous, whose history has just now been given, was totally brown, and about the size of an ordinary cat. I saw one, which, though an adult, was not larger than the fat squirrel. If this small mongous had not perfectly resembled the large kind, except in size,
it

it would unquestionably have been a distinct species. But, as we have no evidence that these two animals do not intermix, we must still regard them as the same species, till we acquire some new light as to their history and oeconomy.

The vari * is larger, stronger, and more ferocious than the maucauco. In a state of liberty, he is even dangerous. We are told by travellers, 'That these animals are as furious as tigers; 'that they make such a noise in the woods, that, 'when only two of them are together, one would 'believe there were a hundred; and that it is 'difficult to tame them †.' The voice of the vari has some resemblance to the roaring of a lion, and is tremendous to those who hear it for the first time. This astonishing strength of voice, in a middle sized animal, depends on the singular structure of its wind-pipe, the two branches of which widen, and form a large cavity, before they enter the lungs. Hence he differs from the maucauco both in structure and dispositions. His hair, in general, is longer; and he

* Flacourt, who calls the maucauco *vari*, gives the name of *varicosity* to this animal; which epithet, probably, denotes the greater size and ferocity of the animal, who likewise differs from the maucauco in several other articles.

† Voyage de Flacourt, p. 153.—When this animal is taken young, he apparently loses his ferocity, and seems to be as gentle as the maucauco. 'It is an animal of a social, mild, 'and peaceable nature, and has neither the cunning nor the 'malice of the monkey;' *Edw. Gleanings*, p. 13.

he has a kind of a ruff or cravat of still longer hair, which surrounds his neck, and forms a very distinct character by which he is easily known. In colour, he varies from white to black, or pied; and his hair, though long and very soft, stands almost perpendicular to the skin. His muzzle is larger and proportionally longer than that of the maucauco. His ears are much shorter, and fringed with long hairs. His eyes are of so deep an orange colour, that they appear to be red.

The maucauco, the mongous, and the vari, belong to the same country, and seem to be confined to Madagascar *, Mosambique, and the lands adjacent to these islands. They appear to be in the Old Continent what the opossums are in the New, which last, like the former, have four hands. With regard to figure, the makis seem to constitute the shade between the long-tailed

* In the province of Melagasse in Madagascar, the different species of monkeys are extremely numerous. Some of them are brown, with woolly hair, and a long bushy tail, which they raise above their backs, and form a shade with it to protect themselves from the sun and rain. In this manner they sleep, like the squirrels, upon the branches of trees. Besides, they have round ears, and a muzzle like the martin. This species is not so troublesome and malicious as the other kinds. The antavarres have the same kind of hair with the former, and a white ruff round the neck. Some of them are entirely white, with a long muzzle. They are as large as the former, and grunt like hogs; *Relat. de Madagascar, par F. Cauche, p. 127.* *Nota.* This passage plainly points out the mongous and vari; and it is upon this authority that I have said, that some vari's are black, others pied, and others entirely white.

tailed monkeys and the digitated quadrupeds. Like the monkeys, they have four hands and a long tail; and, at the same time, their muzzle is long like that of the fox or pole-cat. In manners, however, they have a greater resemblance to the monkeys; for, though they sometimes eat flesh, and likewise lie in wait for birds, they are more frugivorous than carnivorous, and prefer, even in a domestic state, fruits, roots, and bread, to flesh, either raw or roasted.

The



Ch. Bell Sculpt.

VARL.

Plate CCXXVIII.



A. Bell Sculpt.

MONGOUS.

Plate CCXVII



MAUCAUCO.

A. Bell Sculp.

The LORIS, or TAILLESS MAUCAUCO*.

THE Loris is a small animal of Ceylon; which is very remarkable for the elegance of its figure, and the singularity of its conformation. Of all animals, its body is, perhaps, the longest in proportion to its bulk. It has nine lumbar vertebrae, whilst all other quadrupeds have

* Maucauco with a small head, sharp pointed nose, orbits surrounded with a black circle, and a white space between them. From the top of the head, along the middle of the back, to the rump, there is a dark ferruginous line, which on the forehead is bifurcated. The ears are small. The body is covered with short, soft, and silky ash-coloured, and reddish fur. The toes are naked, and the nails flat; those of the inner toe on each hind foot are long, crooked, and sharp. The length of the animal, from the nose to the rump, is sixteen inches; *Pennant's Synops. of quad. p. 135.*

Loris, or *loeris*, the name given to this animal by the Dutch.

Animal elegantissimum Robinsoni; *Raii, Syn. quad. p. 161.*

Simia parva ex cinereo fusca, naso productiore, brachiis, manibus, pedibusque longis, tenuibus, Belgis een loeris. Ex India Orientali; Mus. Petrop. p. 339.

Animalculum cynocephalum, Ceylonicum, tardigradum dictum, simii species; *Seba, vol. 1. tab. 35. fig. 1. et 2. Cerco-pithecus Ceilonicus, seu tardigradus; Idem, tab. 47. fig. 1. Klein. quad. p. 86.*

Lemur tardigradus ecaudatus; Linn. Syst. Nat. p. 44.

Simia unguibus indicis pedum posteriorum longis, incurvis, et acutis; Brisson, quad. p. 134. Cynocephala unguibus indicis longis, incurvis, et acutis Idem, p. 135.

have only five, six, or seven. The length of its body is an effect of this structure; and it appears still longer, because it wants a tail. Were it not for this defect of tail, and the uncommon number of vertebrae, it might be comprehended under the list of makis; for it resembles them in the hands and feet, in the quality of the hair, in the number of teeth, and in the pointed muzzle. But, independent of the singularity above taken notice of, which removes this animal from the makis, he has other peculiar qualities. His head is entirely round, and his muzzle is almost perpendicular to this sphere. His eyes are exceedingly large, and very near each other. His ears are large, rounded, and garnished in the inside with three auricles, in the form of a small shell. But, what is still more remarkable, and perhaps peculiar to this animal, the female discharges her urine by the clitoris, which is perforated like the penis of the male; and these two organs have a perfect resemblance to each other, both in figure and size.

Linnaeus has given a short, but excellent description of this animal *. It is likewise very well

* *Statura sciuri, subferruginea, linea dorsali subfusca; gula albidior, linea longitudinalis oculis interjecta alba. Facies testis, auriculae urceolatae, intus bifoliate; pedum palmarum plantaeque nuda, ungues rotundati; indicum plantarum vero subulati. Cauda fere nulla, mammae 2 in pectore, 2 in abdomine versus pectus. Animal tardigradum, auditu excellens; Linn. Syst. Nat. p. 44.*

Plate CCXXX.



A. Bell's sculp.

LORIS.

THE HISTORY OF THE
LIFE OF SAMUEL JOHNSON

By JAMES BOSWELL
OF GLASGOW

Exceeded not the life of a man
were of an extraordinary length
was his age, and his health
right, yellow, and like that of
his friends, and very thin
white, and his eyes yellow
all. When I said, I
stood on that high spot
and looked down
into the valley



well represented by Seba ; and it appears to be the same animal of which Thevenot speaks in the following terms : ‘ I saw in the Mogul country apes which had been brought from Ceylon. They were much esteemed, because they exceeded not the size of a man’s hand, and were of an uncommon species. Their front was flat, their eyes large and round, and of a bright yellow colour, like those of certain cats. Their muzzle is very sharp, and the inside of their ears is yellow. They have no tail. When I examined them, they stood on their hind feet, often embraced each other, and looked stedfastly on the people, without being afraid *.’

VOL. VII.

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The

* Relation de Thevenot, tom. 3. p. 217.

The JAVELIN BAT*.

OF the various bats which were unknown, we denominated some by names derived from foreign languages, and others by appellations drawn from their most striking characters. The animal now under consideration we have called the *javelin bat*, because it has a membrane on its nose nearly of the shape of an ancient javelin or spear. Though this character be sufficient to distinguish it from all other bats, we may add, that it has almost no tail; that it is nearly of the same colour and size with the common

* Javelin bat with large pointed ears, and an erect membrane at the end of the nose, in the form of the head of an ancient javelin, having on each side two upright processes. It has no tail; the fur is cinereous; and it is of the size of a common bat; *Pennant's Synops. of quad. p. 363.*

Vespertilio Americanus vulgaris; Seb. Mus. vol. 1. tab. 55. fig. 2.

Vespertilio perspicillatus, ecaudatus, naso foliato, plano, acuminato; Linn. Syst. Nat. p. 47.

Vespertilio murini coloris, pedibus anticis tetradactylis, posticis pentadactylis; Brisson, quad. p. 161.—Nota. This animal has five toes on the fore feet, as well as all the other bats.

Bat from Jamaica; *Edw. Birds, p. 201.*

Vespertilio rostro appendice auriculæ forma donato; Sloan's hist. of Jamaica, vol. 2. p. 330.

La chauve-souris fer-de-lance; Buffon.

common bat; but that, instead of having six cutting teeth in the under jaw, like most of the other species, it has only four. This bat, which is very common in America, does not exist in Europe.

In Senegal, there is another bat with a membrane on its nose; but this membrane, instead of resembling a javelin, or a horse shoe, as in this and a former species, has the figure of an oval leaf. These three bats, as they belong to different climates, are not simple varieties, but distinct species. M. Daubenton has described this bat under the name of the *leaf bat*, in the *Memoirs of the Academy of Sciences*, ann. 1759, p. 374.

The bats, which are already greatly allied to the birds by their flying, their wings, and the strength of their pectoral muscles, seem to make a still nearer approach by these crests or membranes on their face. These redundant parts, which, at first sight, appear to be superfluous deformities, are the real characters, the visible shades, by which Nature has connected these flying quadrupeds to the birds; for most of the latter have membranes and crests round their bills and heads, which seem to be equally superfluous with those of the bats.

S U P P L E M E N T.

M. Pallas, who sent us descriptions of two new bats, the figures of which we now give, informs us, that the javelin bat, formerly described, should not be confounded with the bat described by Seba under the appellation of the common American bat. M. Pallas, after comparing the two, assures us, that they are very different species. Our acknowledgments are due to M. Pallas for pointing out this mistake.

He then gives a description of one of these new bats, which is a native of India. He calls it *cephalote*, because its head is very large in proportion to its body. The neck is also more distinct, because it is not so thickly covered with hair. The following is an extract from M. Pallas's description.

‘ This bat, hitherto unknown to the Naturalists, is found in the Molucca islands, from which two females were sent to M. Schloffer at Amsterdam. The female seems to produce but one young. This conjecture is founded on M. Pallas's dissection of one of these females, in which he found one foetus only.

‘ This bat,’ continues M. Pallas, ‘ differs from all others in the teeth, which have some resemblance to those of the mouse, or even of
‘ the

the hedge-hog, and appear to be rather destined for cutting fruits than for devouring prey. The canine teeth of the upper jaw are separated by two small teeth. In the under jaw, these small teeth are wanting, and the two canine teeth of the same jaw are like the cutting teeth of a mouse.

I shall here add a table of the number and arrangement of the teeth in the bat-kind, communicated to me by M. Daubenton; from which it will appear, that the cephalotte, and the *shrew bat*, to be afterwards taken notice of, are new species discovered by M. Pallas.

TABLE.

N A M E S.	Cutting Teeth Below.	Cutting Teeth Above.	Grinders Above.	Grinders Below.	Canine Teeth.	Total.
Horse-shoe bat .	0	4	8	10	4	26
Leaf bat . . .	0	4	8	10	4	26
Flying rat . . .	2	2	8	10	4	26
Flying field mouse	2	2	8	10	4	26
Flying marmot .	2	6	8	8	4	28
Flying squirrel .	0	4	10	10	4	28
Flying campagnol	4	6	8	8	4	30
Noctule	4	6	8	10	4	32
Serotine	4	6	8	10	4	32
Flying dog . . .	4	4	8	12	4	32
Ternate bat . . .	4	4	8	12	4	32
Pipistrelle . . .	4	6	10	10	4	34
Long-eared bat .	4	6	10	12	4	36
Common bat . . .	4	6	12	12	4	38
Flying dormouse .	4	6	12	12	4	38
Javelin bat . . .	4	4	10	10	4	32
Cephalotte . . .	2	0	6	10	4	22
Shrew bat . . .	4	4	6	6	4	24

Plate CCXXXI.



HORSE SHOE BAT.

170000



170000

Plate CCXXXII



A. Bell & Co. sculp.

LARGE-HEADED BAT



SHREW BAT

The second species of *Leptocryptus* is
 found under the same conditions as the first.
 It is smaller than the first, and its wings
 extend about 1.5 inches beyond the body.
 The wings are more transparent than those of
 the first species, and the veins are more
 distinct. The body is more slender, and
 the legs are longer. The antennae are
 also longer, and the head is more
 rounded. The color of the body is a
 pale yellow, and the wings are a
 light brown. The legs are a pale
 yellow, and the antennae are a
 light brown. The head is a pale
 yellow, and the eyes are a light
 brown. The mouthparts are a light
 brown, and the feet are a pale
 yellow. The wings are a light brown,

'The tail of the cephalotte bat,' says M. Pallas, 'is not long, and is situated under the membrane between the two thighs. The figure of the nostrils distinguishes it from every other bat. The form of the pupil likewise differs from that of every other bat. The breast is broad, and has a greater resemblance to the breast of a bird than any other species. This animal is about $3\frac{1}{2}$ inches long, and its wings extends above a foot in length.'

The second species of bats described by M. Pallas under the denomination of *vespertilio soricinus*, or shrew bat, has no tail, and carries a leaf or membrane on its nose. It is the smallest of those kinds which want the tail, being only about two inches long. It is equally common in the warmest regions of America, the Caribbee islands, and Surinam. Its figure seems to be given by Edwards, *plate 201. fig. 1*. The muzzle of this bat is longer, and more slender than in the other kinds. The tongue is remarkable both for its length and structure. The male and female hardly differ but in the organs of generation.

The

THE JAVELIN BAT.
 The **SERVAL***, or **MOUN-
 TAIN CAT.**

THIS animal, which lived several years in the royal menagerie, appears to be the same with that described by the gentlemen of the academy under the name of *chat-pard*; and we should, perhaps, have been still ignorant of its real name, if the Marquis de Montmirail had not discovered it in an Italian book, of which he sent us the following passage in our own language: 'The *Maraputé*,' says P. Vincent-Marie, 'which the Portuguese in India call *Serval*, is a ferocious animal, larger than a wild cat, and somewhat less than the civer; from which last he differs, by having a rounder and larger head, and a kind of depression on the middle of the front. He resembles the panther in the colour of his hair, which is yellow on the head, back, and flanks, and white on the belly; and likewise in the spots, which are distinct, equally distributed, and a little smaller than those of the panther. His eyes are extremely brilliant.

The name which the Portuguese have given to this animal. The natives of Malabar call it *Maraputé*.

Chat-pard; *Mem. pour servir à l'hist. des animaux*, part 1. p. 109.

Voyage du Père F. Vincent-Marie de Sainte-Catharine de Sienna, p. 409.

' liant. His whiskers are long and stiff; his
 ' tail is short; and his feet are armed with long
 ' hooked claws. He inhabits the mountains of
 ' India. He is seldom seen on the ground, but
 ' remains always on the trees, where he makes
 ' his nest, and seizes birds, which constitute his
 ' chief nourishment. He leaps from tree to
 ' tree as nimbly as a monkey, and with such ad-
 ' dress and agility, that he runs through a con-
 ' siderable space in an instant, and may be said
 ' only to appear and disappear. He is extreme-
 ' ly fierce, and yet he flies the aspect of man,
 ' unless when provoked, and particularly when
 ' his dwelling is injured: He then becomes fu-
 ' rious, darts upon the offender, and bites and
 ' tears nearly in the same manner as the pan-
 ' ther.'

Neither captivity, nor good or bad treatment,
 can soften the ferocity of this animal. The one
 we saw at the menagerie was always prepared
 to dart upon those who approached him; and
 we were obliged to draw and describe him
 through the grate of his apartment. He was
 fed with flesh, like the panthers and leopards.

This serval or maraputa of Malabar and In-
 dia *, appeared to be the same animal with the
 tiger-cat of Senegal and the Cape of Good Hope,
 which, according to the testimony of travellers †,

VOL. VII.

H h

resembles

* At Sagari, an island in the Ganges, there are tiger-cats
 as large as a wedder; *Nouv. voyage par le Sieur Luillier*, p. 90.

† Voyage de Le Maire, p. 100.—The wood-cat or tiger-
 cat,

resembles the cat in its figure, and the tiger (that is, the panther or leopard) by the black and white spots of its hair. 'This ferval,' they remark, 'is four times larger than a cat. He is very voracious, and eats apes, rats, and other animals.'

From comparing the ferval with the *chat-pard*, or mountain cat, described by the Gentlemen of the academy, we discovered no other differences than the long spots on the back, and the annulated tail of the former, which were wanting in the latter. The spots on the back of the ferval are only placed nearer each other than on the rest of the body. But these differences are too slight to create any suspicion concerning the identity of the species of these two animals.

The

cat, is the largest of all the wild cats in the Cape. He lives in the woods, and is spotted nearly in the same manner as the tiger. The skins of these animals are excellent furs both for warmth and ornament, and they bring a good price at the Cape; *Descript. du Cap. de Bonne-esperance, par Kolbe, tom. 3. p. 50.*



SERVAL.

St. Ball's

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The OCELOT, or MEXICAN CAT*.

THE Ocelot is an American animal. It is ferocious and carnivorous, and may be ranked with the jaguar and cougar; for it approaches them in magnitude, and resembles them in figure and dispositions. A male and female were brought alive to Paris by M. l'Escot, and we

* Tlacoozlotl, Tlalocelotl. *Catus pardus Mexicanus*; *Hernand. Hist. Mexic. p. 512.*

Felis sylvestris Americanus, tigrinus; *Seb. Mus. som. 1. p. 47. tab. 30. fig. 2. and p. 77. tab. 48. fig. 2.*

The Mexican cat has its head, back, upper part of the rump, and tail, of a bright tawny colour. A black stripe extends along the top of the back, from head to tail. From the nostrils to the corners of the eye is a stripe of black, and the forehead is spotted with black. The sides are whitish, marked lengthwise with long stripes of black, hollow and tawny in the middle; in which are sprinkled some small black spots; from the neck towards the shoulders point are others of the same colours, and the rump is marked in the same manner. The legs are whitish, varied with small black spots. The tail is spotted with small black spots near its base, and with larger near the end, which is black; *Pennant's Synops. of quad. p. 177.*

Pardalis. Felis cauda elongata, corpore maculis superioribus virgatis, inferioribus orbiculatis . . . habitat in America. Magnitudo melis, supra fuscus, subtus albicans; lineae punctaque nigra per totum corpus longitudinaliter sparsa; sed pedes et abdomen tantum punctis, latera lineis latioribus albis et fuscis pinguntur. Aures breves margine bifidae absque penicillis, pedes 5-4 cauda verticillato variegata proportionem cati. Mystaces 4 ordinum, in singulo ordine setae 3, sive 5, albae, basi nigrae, longitudine capitis; Linn. syst. nat. p. 62.

we saw them at the fair of St Ovide in the month of September 1764. They came from the neighbourhood of Carthagena, and had been carried off from their mother when very young, in the month of October 1763. At the age of three months, they had become so strong and cruel, that they killed and eat a bitch which had been given to them for a nurse. At the age of one year, when we saw them, they were about two feet in length; and it is probable that they had not then acquired above one half or two thirds of their full growth. They were exhibited under the name of the *tiger-cat*; but we have rejected this precarious and compound appellation, because the jaguar, the serval, and the margay or Cayenne cat, were transmitted to us under the same denomination, though each of these animals differ from one another, as well as from the ocelot.

Fabri is the first author who mentions this animal in a distinct manner. He caused the drawings of Recchi to be engraved, and from these drawings, which were coloured, he composed a description of the ocelot. He likewise gives a kind of history of it from the writings and information of Gregoire de Bolivar. I have made these remarks with a view to remove a difficulty which had deceived all the naturalists as well as myself. This difficulty is to ascertain whether the two animals drawn by Recchi, the first under the name of *Tlatlaybqui-ocelotl*, and the

the second under that of *Tlacoozlotl*, *Tlalocelotl*, and afterwards described by Fabri as distinct species, are not the same animal. Though the figures are pretty similar, they were regarded as distinct animals, because their names, and even the descriptions of them, were different. I at that time imagined that the first might be the same with the jaguar, and therefore gave it the Mexican name *Tlatlahqui-ocelotl*, which I now perceive did not belong to it: And, since I had an opportunity of seeing both the male and female, I am persuaded that the two described by Fabri, are only the same animal, of which the first is the male and the second the female. Nothing less than an examination of the male and female together could have enabled us to detect this error. Of all spotted animals, the robe of the male ocelot is unquestionably the most beautiful, and the most elegantly variegated*. Even that of the leopard is not to be compared with it for vivacity of colours, and symmetry of design, far less those of the jaguar, panther, and ounce. But, in the female ocelot, the colours are fainter,

* Univerſum corpus pulchro roſeoque ſubrubet colore, excepto inferiore ventre qui albicat potius; maculis roſarum effigie, nigricantibus omnibus intra ſuave rubentem colorem, totum ita corpus, pedes et cauda ordine quodam diſtinguuntur ut elegantem plane huic animali acu pictum tapetem vel peripetaſma impoſitum crederes: Sunt autem maculae hae in dorſo et capite rotundiores majoresque: Verſus ventrem vero pedesque oblongiusculae, et multo minores; *Fabri apud Hernand. Hiſt. Mex. p. 498.*

and the design more irregular. This remarkable difference deceived Recchi, Fabri *, and others.

When the ocelot has acquired his full growth, he is, according to Bolivar, two feet and a half high, and about four feet in length. The tail, though pretty long, touches not the ground, and, of course, exceeds not two feet. He is a very voracious, and, at the same time, a timid animal. He seldom attacks men, and is afraid of dogs. When pursued, he flies to the woods, and climbs a tree, where he remains, in order to sleep, and to watch the passage of cattle or smaller animals, and darts down upon them, whenever they are within his reach. He prefers blood to flesh : Hence he destroys a great number of animals ; because, instead of satiating himself by devouring their flesh, he only quenches his thirst by drinking their blood †.

In

* Si animalis figuram spectemus cum antecedente non nihil corporis delineatio congruit ; si colorem et maculas quibus pingitur, plurimum discrepat. In hoc totius color corporis non rubicundus sed obscure cinereus apparet, praeter ventrem tamen qui albicat. Maculae nec ordinatae adeo nec ita rotundae roseive coloris et figurae, sed oblongae nigricantes omnes, in medio vero albicantes sparguntur ; crura non ita fortia, &c. *ibid.* p. 512.

† Dampier mentions this animal under the name of the *tiger-cat*. ' The tiger cat of the Bay of Campeachy is about the size of a bull-dog. His legs are short, and his body resembles that of a mastiff. But, in the head, hair, and the manner of hunting his prey, he has a great similarity to the tiger (*jaguar*), except that he is not so large. They are here very

In a state of captivity he retains his original manners. Nothing can soften the natural ferocity of his disposition, or calm the restlessness of his movements. For this reason, he is always kept in a cage. 'At the age of three months,' says M. l'Escot, 'when these two young ocelots had devoured their nurse, I kept them in a cage, and fed them with fresh meat, of which they eat from seven to eight pounds a-day. The male and female rub against each other like our domestic cats. The males have a remarkable superiority over the females. Notwithstanding the violent appetite of these two animals for flesh, the female never presumed to partake till the male was satiated, or gave her the pieces he had rejected. I sometimes gave them a live cat, whose blood they sucked till the animal died; but they never eat its flesh. I put on board two kids for their subsistence; for they neither eat boiled nor salted meat *.'

It appears from the testimony of Bolivar, and likewise from that of M. l'Escot, that the female ocelot

'very numerous. They devour calves, and game of all kinds, which abound in this country, and which render them less dangerous to men. . . . Their aspect is extremely proud and ferocious;' *Dampier's voyage*, vol. 2. p. 62.

* Letter of M. l'Escot, who brought these animals from Carthagena to M. de Beost, correspondent of the Academy of Sciences, dated September 17. 1764. *Nota*, M. de Beost, who obligingly sent this letter to us, is a great adept in natural history; and this is not the only opportunity we shall have of mentioning his communications.

ocelot produces but two young at a litter; for the latter informs us, that, before the two young ones mentioned above were taken, the mother was killed. The ocelots, like the jaguar, the panther, the leopard, the tiger, the lion, and all animals remarkable for the largeness of their size, produce but a small number at a time. But the productions of a cat, who may be associated with this tribe, are numerous; which is a proof, that the number produced depends more upon magnitude than figure.

The



Ch. Bell

OCELOT.

THE HISTORY OF THE

ROYAL NAVY

FROM THE FIRST

SETTLEMENT OF THE

BRITISH COLONIES

TO THE PRESENT

STATE OF THE

NAVY

IN THE YEAR

1794

BY

JOHN

BARRETT

OF THE

NAVY

OFFICE

IN

THE

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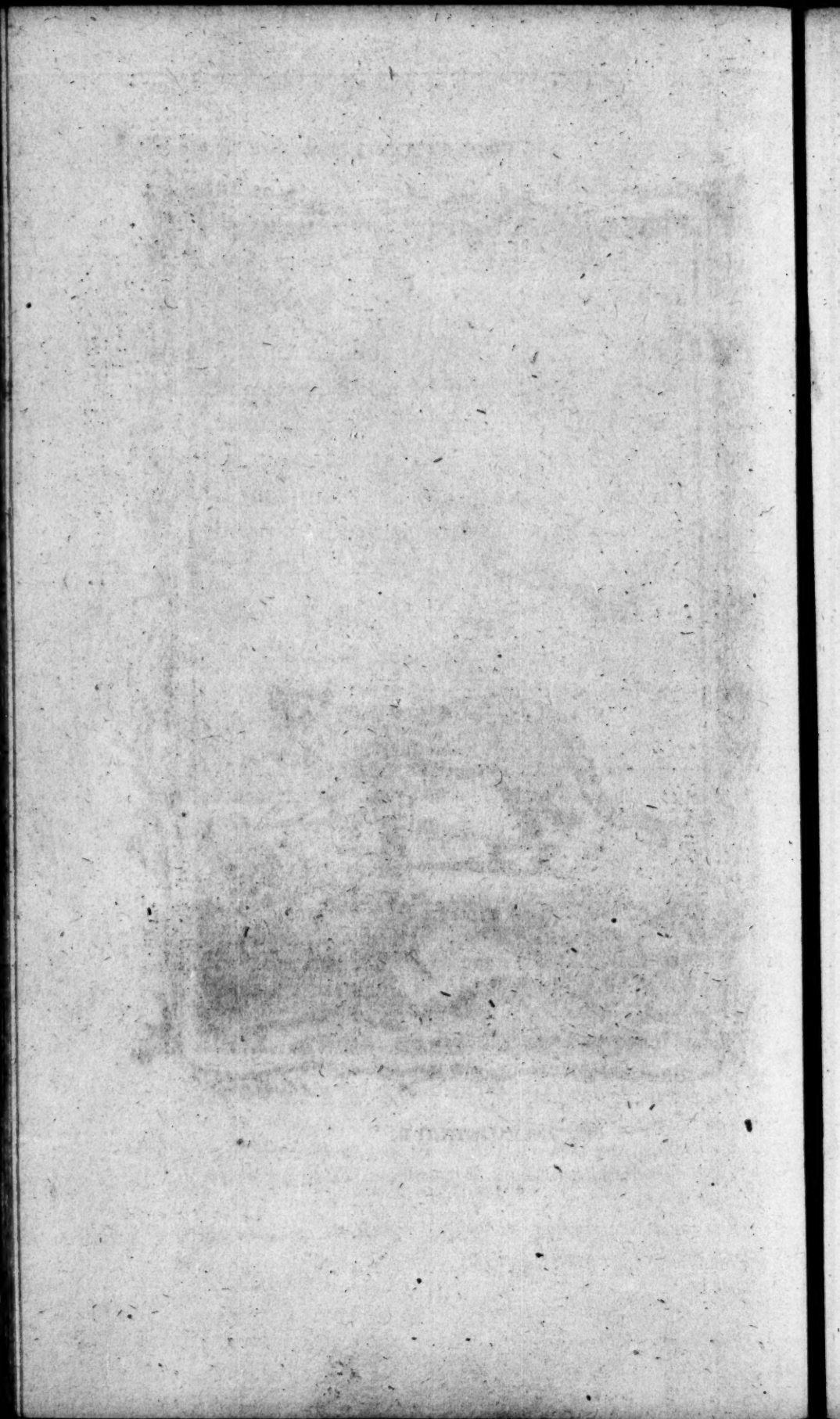
THE

NAVY

OFFICE



FEMALE OCELOT.



The MARGAY, or Cayenne CAT*.

THE Margay is much smaller than the ocelot. In size and figure, he resembles the wild cat, only his head is more square, his muzzle and tail longer, and his ears more rounded. His hair is also shorter than that of the wild cat, and he is marked with black bands and spots upon a yellow ground-colour. He was sent

VOL. VII.

I i

to

* Cayenne cat, with the upper part of the head, neck, back, sides, shoulders, and thighs of a bright tawny colour. The face is striped, downwards, with black. The shoulders and body are marked with stripes, and oblong, large, black spots, and the legs with small spots. The breast, and inside of the legs and thighs are whitish, and spotted with black. The tail is very long, and marked with black, tawny, and gray. It is of the size of a common cat; *Pennant's synops. of quad.* p. 182.

Margay, a word derived from *Maragua* or *Maragaia*, the Brazilian name of this animal.

At Maragnon, there is a species of wild cats, which the Indians call *Margaia*, with beautifully spotted skins; *Miss. du P. d'Abbeville*, p. 250.

Tepe Maxtlaton; *Fernand. Hist. Nov. Hispan.* p. 9.

Maraguao five Maracáia; *Marogr. hist. nat. Brasil.* p. 233.

Felis fera tigrina Malakaia; *Barrére, hist. de la Franc. Equin.* p. 153.

Le Pichou, cat-a-mountain; *du Pratz, Louisian. vol. 2.* p. 64.

Felis sylvestris tigrina ex Hispaniola; *Seba, vol. 1.* p. 77. tab. 48. fig. 2.

Felis sylvestris tigrina, ex griseo flavescent, maculis nigris variegata; *Briffon. quad.* p. 193.

to us from Cayenne, under the name of the *tiger-cat*. He, indeed, is of the same nature with the cat, jaguar, and ocelot, animals who have received the appellation of *tigers* in the New Continent. According to Fernandez, this animal, when full grown, is not so large as the civet; and, according to Marcgrave, whose comparison seems to be more just, he is of the size of a wild cat, which he resembles likewise in natural dispositions, living on small animals, poultry, &c. But it is extremely difficult to tame him, and he never loses his natural ferocity. His colours vary, though they are generally such as we have represented them. This animal is very common in Guiana, Brasil, and all the other regions of South America; and he seems to be the same with the pichou* of Louisiana. But the species is not so frequent in temperate as in warm climates.

If we take a survey of these cruel animals, whose skins are so beautiful, and whose nature is so perfidious, we shall find, in the Old Continent, the tiger, panther, leopard, ounce, and serval; and, in the New Continent, the jaguar, ocelot, and margay, which three appear to be miniatures of the former, and possessing neither the

* The Pichou is a kind of cat as tall as a tiger, but not so thick. His skin is equally beautiful. He makes great devastation among poultry; but happily he is not very common in Louisiana; *Hist. de la Louisiane, par le Page du Pratz, tom. 3, p. 92. fig. p. 67.*

the same stature nor strength; they are also timid and dastardly, in proportion as the others are bold and intrepid.

There is still another animal of this genus, which the furriers call *Guepard*. We have seen several skins of it, which resembled those of the lynx in the length of the hair. But, as the ears are not terminated by pencils, the guepard is not a lynx. Neither is he a panther nor a leopard; for his hair is not short, and he has a mane of four or five inches long on his neck and between his shoulders. The hair on his belly is likewise three or four inches in length, and his tail is proportionally shorter than that of the panther, leopard, or ounce. He is nearly of the size of this last animal, being only about three feet and a half long. His fur, which is of a very pale yellow colour, is speckled, like that of the leopard, with black spots; but they are smaller and nearer each other, being only three or four lines in diameter.

I imagined that this animal was the same with that mentioned by Kolbe under the name of the *tiger-wolf*, whose description is below*.

He

* He is of the size of a common dog, and sometimes larger. His head is as big as that of a bull dog. His chops, as well as his muzzle and eyes, are large, and his teeth are very sharp. His hair is curled, like that of a water-dog, and spotted like that of a tiger. His paws are large, and armed with great claws, which he retracts at pleasure, like the cats. His tail is short.—The lion, tiger, and leopard are his mortal enemies. They pursue him even to his

He is common in the neighbourhood of the Cape of Good Hope. During the day he remains in the clefts of rocks, or in holes which he digs in the earth; and, in the night, he goes in quest of prey. But, when he hunts, he makes a howling noise, which alarms both men and animals; so that it is easy either to avoid or to kill him. In fine, the word *guépard* seems to be derived from *lépard*, the mode in which the Germans and Dutch spell *leopard*. We have also remarked, in this species, varieties both in the ground-colour and in that of the spots. But all the guepards have the common characters of long hair on the belly, and a mane on the neck.

S U P P L E M E N T.

To the article *Margay* we must refer the tiger-cat of Cayenne, mentioned by M. de la Børde in the following terms:

‘The skin of the tiger-cat, like that of the ounce, is very much spotted. Though he has the dispositions of the fox, he is somewhat smaller. He is commonly found in the woods of Cayenne.

his den, dart upon him, and-tear him in pieces; *Descript. du Cap de Bonne-Esperance, par Kolbe, tom. 2. p. 69.* *Nota.* The animal which this author calls the *tiger*, is the leopard, and what he calls the *leopard*, is the panther.

' Cayenne. He is a great destroyer of game,
 ' such as the agoutis, akonchis, partridges, pheas-
 ' ants, and other birds, whose young he seizes
 ' in their nests. He is very alert in climbing
 ' trees, where he conceals himself. He runs by
 ' a kind of leaping; but his motion is not quick.
 ' In his aspect, gait, and manner of lying in wait,
 ' he has a perfect resemblance to the cat. At
 ' Cayenne, I have seen several of them chained
 ' in the houses. They allowed themselves to
 ' be stroked a little on the back. But they al-
 ' ways retained a degree of ferocity in their a-
 ' spect. They were fed with fish and meat,
 ' boiled or raw: Every other food was disagree-
 ' able to them. They produce in all seasons,
 ' whether summer or winter, and bring forth two
 ' at a time in the hollows of corrupted trees.'

There is another tiger-cat, or rather a species
 of wild cat, in Carolina, of which the late Mr
 Colinson sent me the following notice.

' The male was of the size of a common cat,
 ' being nineteen inches long from the nose to the
 ' tail, which last was four inches in length, and
 ' had eight white rings, like the maucauco. His
 ' colour was a bright brown, mixed with gray
 ' hairs. He was remarkable for pretty large
 ' black bars along the body and sides, from the
 ' head to the tail. The belly is whitish, with
 ' black spots. The limbs are slender, and spotted
 ' with black. His ears have a large aperture,
 ' and

' and are covered with fine hair. On each side
 ' of the nose, below the eyes, are two large and
 ' remarkable black spots; below these spots, and
 ' joining the lip, there is a tuft of stiff black hairs.
 ' The make of the female is more slender. She
 ' is of a reddish gray colour, without any spots
 ' on the back; but, on the belly, which is of a
 ' dirty white colour, there is a black spot.'

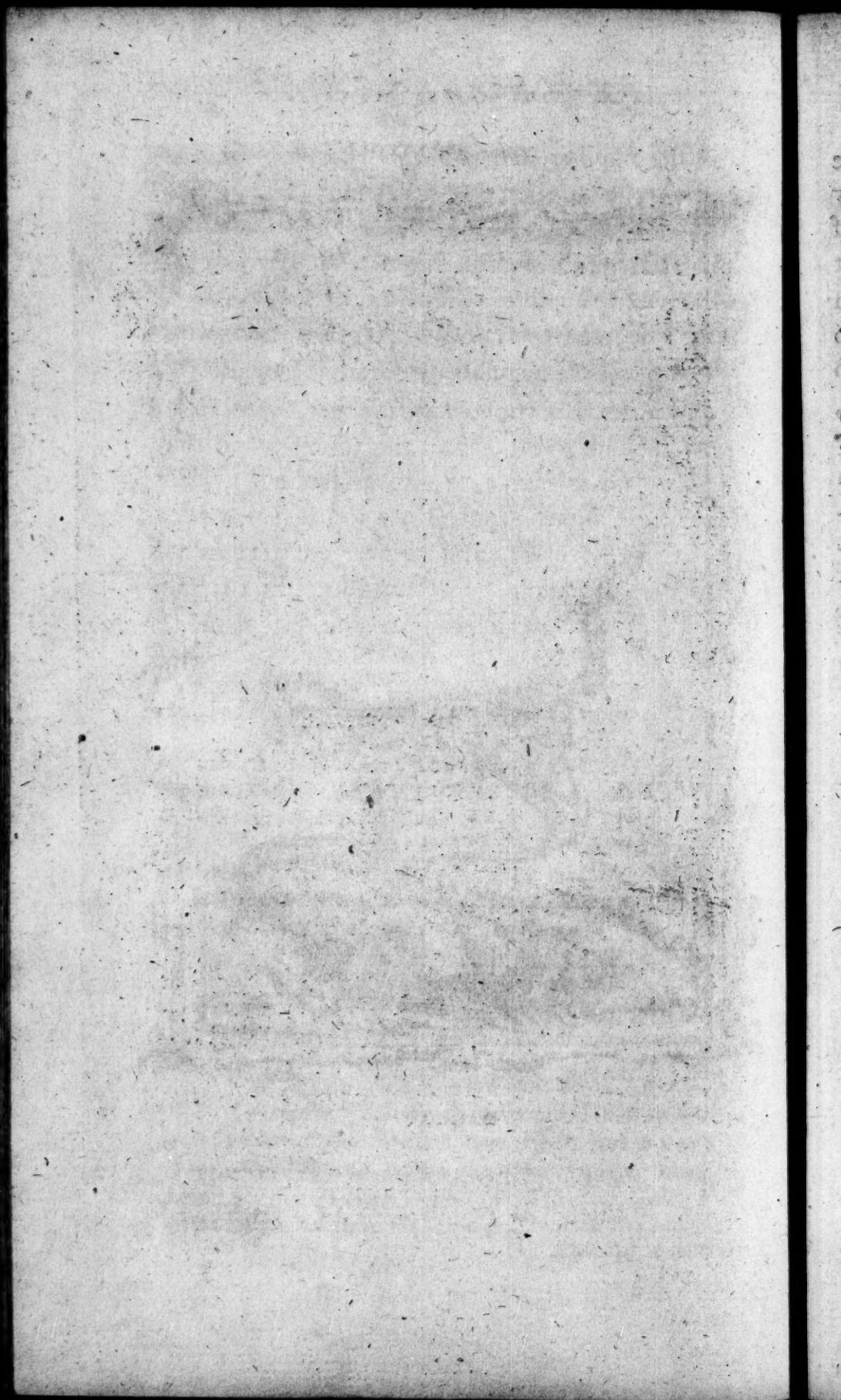
The

Plate CCXXXVII



Ch. Bell's Engraving

MARGAY.



THE JACKAL and ADIVE*.

WE are uncertain whether these two names denote animals of different species. We only know, that the jackal is larger, fiercer, and more difficult to tame than the adive†; but that, in every other article, the resemblance is perfect. Hence the adive may be only the jackal rendered smaller, feebler, and more gentle than the wild race, by being tamed and kept in a domestic state; for the adive is to the jackal nearly what

* Dog of the form of a wolf, but much less. The colour is a bright yellow; *Pennant's synops. of quad.* p. 158.

Chacal, Jackal, the name of this animal in the Levant. It has likewise received the following denominations from different authors: *Adil*; *Belon*. Tulki; *Olearius*. Siacalle; *Le Brun*. Addibo; *P. Vincent Marie*. Chical; *Hasselquist*. Sical; *Pollux*. Squilachi; *Belon*. Zacalia; *Spon and Wheeler*. Siachal, Sehachal, Siechaal, Siacali; *Koempfer*. Jacard; *Delon*. Deeb; *Shaw*. Jaqueparel, in Bengal, and Nari in Madeira, according to other travellers.

Adil, an animal between a wolf and a dog, which the modern Greeks call *Squilachi*, and believe to be the *chryseos* or *lupus aureus* of the antient Greeks; *Obs. de Belon*, p. 163.

Lupus aureus; *Koempfer*, *Amenit. exotic.* p. 413. fig. p. 407. fig. 3. *Raii synops. quad.* p. 174. *Klein. quad.* p. 70.

Vulpes Indiae Orientalis; *Valentin. Mis.* p. 452.

Canis flavus; *Briffon, quad.* p. 171.

Canus aureus, lupus aureus dictus; *Linn. Syst. nat.* p. 59.

† I have read, in some of our French chronicles, that, in the reign of Charles IX. many of the court ladies kept adives, instead of lap-dogs.

what the lap-dog, or small water-dog, is to the shepherd's dog. However, as this fact is only exemplified in a few instances; as the species of the jackal is not, in general, domestic, like that of the dog; and, as differences so great seldom happen among free species; we are inclined to believe that the jackal and adive are really two distinct species. The wolf, the fox, the jackal, and the dog, though they approach very near each other, constitute four different species. In the dog-kind, the varieties are extremely numerous. Most of these originate from their domestic condition, to which they have been very early reduced. Man has multiplied the races of this species by mixing the great and the small, the beautiful and the ugly, the long and the short haired, &c. But, independent of these races produced by man, there are several varieties which seem to derive their origin from the climate. The English bull-dog, the Danish dog, the spaniel, the Turkish dog, the Siberian dog, &c. have received their denominations from the countries which produced them; and they appear to differ from each other more than the jackal does from the adive. Hence the jackals may have undergone several changes from the influence of different climates; and this idea corresponds with the facts we have collected. From the writings of travellers it appears that the jackals every where vary in size; that in America, Cilicia, Persia, and in all that part of Asia called the *Levant*, where
this

this species is very numerous, troublesome, and noxious; they are commonly as large as our foxes *, only their legs are shorter, and their

VOL. VII.

K k

colour

* The Jacard or adive is as large as a middle sized dog, and resembles the fox in its tail, and the wolf in its muzzle. They are reared in houses; but their natural disposition is to conceal themselves, during the day, in the earth, from which they go out in the night only to search for food. They go in packs, put the men to flight, and devour the children. Their cries are plaintive, and a person is apt to mistake the noise they make for that of children of different ages mingled together. The dogs hunt and drive these animals from the habitations of men; *Voyage de Delon, p. 109.*—In Persia there is a species of fox called *Schacal*, which the natives commonly denominate *Tulki*. They are extremely numerous, and nearly of the size of European foxes. The back and sides are covered with a kind of coarse wool and long stiff hairs. The belly is white as snow, the ears black as jet, and the tail is smaller than that of our foxes. We heard them roaming during the night around the village where we had put up, and were much troubled with their mournful and incessant cries, which resembled the voices of men in distress; *Voyage d'Olearius, p. 531.* The addibo (*adive*) resembles the wolf in figure, hair, and tail. But it is smaller, and even less than the fox. It is an extremely voracious, but a stupid animal. In the night it roams about, and remains in its hole during the day. In the dusk of the evening nothing else is to be seen in the fields. These animals approach travellers, and stop to reconnoitre them, without any appearance of fear. They enter the houses and churches, where they tear and devour every thing they can find. Whatever is made of leather is a favourite morsel. The adive yelps like a fox; and when one cries, all the rest reply. This instinct of crying all together seems not to be voluntary, but to proceed from pure necessity; for, when one of them enters into a house to steal, and hears the cries of his companions at a distance, he cannot refrain from crying also, and by this means detects himself; *Voyage du P. Fr. Vincent-Marie, chap. 13.*—A

colour is a brilliant yellow; from which circumstances they have been called the *yellow* or *golden wolf*. In Barbary, the East Indies, the Cape of Good Hope, and the other provinces of Africa and Asia, this species seems to have undergone several variations. In these warm countries, they are large; their hair is rather of a brownish red than of a fine yellow, and some of them are of different colours *. The species
of

13.—A chacali was kept for ten months in a house where I lived some time. This animal has so great a resemblance to the fox in size, figure, and colour, that most travellers are at first deceived with it. The greatest difference between them is in the head, the chacali having a head like a shepherd's dog with a long muzzle, and in the hair, which is coarse like that of the wolf. Its colour is also similar to that of the wolf; and it sends forth a stench, which infects every thing it touches.—This animal is extremely bold and voracious.—He is not afraid to enter the houses.—When he meets a man, instead of flying instantly, like other animals, he looks at him with as much boldness as if he meant to brave him, and then runs off. He is very mischievous, and always apt to bite, whatever care is taken to soften him by caresses, or by giving him food. The one formerly mentioned, though taken when very young, and reared with as much attention as a favourite dog, was never rendered perfectly tame: He allowed no body to touch him, and bit every person indiscriminately. He could never be prevented from leaping on the table, and carrying off every thing he could lay hold of. All the country of Natolia is crowded with these chacalis. During the night, they make a hideous noise round the villages, not only by barking like dogs, but by a certain sharp cry which is peculiar to them; *Voyage de Dumont, tom. 4. p. 29.*

* The jackal which the subjects of the King of Comania, near Agra, brought us, was as large as a sheep; but its legs
were

of the jackal is diffused over all Asia, from Armenia as far as Malabar †, and is likewise found in

were taller. Its hair was short and spotted, and its paws prodigiously thick in proportion to its body.—Its head was also very thick, flat, and broad; and each of its teeth exceeded an inch in length.—Its feet are armed with prodigiously strong claws; *Voyage, de Bosman, p. 334.*

† In Bengal, there are wild dogs, called *Jacqueparels*, or *howling dogs*, whose hair is red. During the night, they go along the banks of the Ganges barking in a hideous manner. Their voices and their cries are so various and confused, that a man cannot hear himself speak. They turn not aside when the Moors pass near them.—These animals are common in almost all the East India islands; *Voyage d'Innigo de Bierwillas, prem. part. p. 178.*—In Madeira there is a kind of wild dog, or rather fox, which the Indians call *Nari*, and the Portuguese *Adiba*.—When I travelled in the night, I heard these animals howling perpetually; *Lettres Edifiantes, recueil 12. p. 98.*

—In Guzarat, there is a species of wild dog called jackals; *Relation de Mandelslo, apud Olear. tom. 2. p. 234.*—In the Malabar country, I saw a great number of jackales or jackals. I saw them also in the woods of Ceylon. They resemble the fox, particularly in the tail.—They are extremely fond of human flesh.—They followed our army, and tore up the dead from their graves.—In the night, we often heard the dismal cries of these animals, which resembled those of enraged dogs.—They cry alternately, as if they answered each other; *Recueil des Voyage de la Compagnie des Indes Orientales, tom. 6. p. 980.*—All the country of Calicut is likewise infested with foxes (*Jackals*), which come during the night into the town, and roam about like dogs. In the gardens and highways, no other noise is to be heard; *Voyage du Fr. Pyrard, tom. 1. p. 427.*—The schecale is a kind of wild dog.—They are so numerous in the environs of Surat, that we could not hear one another, on account of the great noise they made, crying distinctly *oua, oua, oua*, which approaches to the barking of a dog. This animal is fond of dead bodies.—They are likewise frequent in the deserts of Arabia, along the banks of the Tigres and Euphrates, and in Egypt; *Voyage de la Boulaye-le-Gouz, p. 254.*

in Arabia, Barbary *, Mauritania, Guiney †, and the Cape of Good Hope. It seems to be destined to supply that of the wolf ‡, which is wanting, or at least is extremely rare, in all warm countries.

However, as the jackals and adives are found in the same countries, as the species could not be degraded by continuing long in a domestic state,

* The deeb is of a darker colour than the fox, though near the same bigness. It yelps every night about the gardens and villages, feeding, as the dubbah does, upon roots, fruits, and carrion. Mr Ray supposes it to be the *lupus aureus* of the antients; though what Oppian describes by that name is larger, and of a much fiercer nature; *Shaw's travels*, p. 174.

† In Guiney, and still more commonly in the countries of Acra and Acambou, there is a very cruel animal, which our people call *Jackal*.——In the night, they come under the very walls of the fort we have in Acra, in order to carry off from the stables, hogs, sheep, &c.; *Voyage de Bosman*, p. 249. 331.——The wild dogs of Congo, called *Mebbia*, are mortal enemies to all kinds of quadrupeds. They differ little from our hounds. They go in packs of thirty, forty, and sometimes in greater numbers.——They attack all kinds of animals, and their number generally ensures them of success. They never assail men; *Voyage du P. Zuchel, cité par Koble*, p. 293. The wild dog of the Cape of Good Hope resembles those of Congo described by P. Zuchel, &c.; *Descript. du Cap de Bonne Esperance, par Kolbe, part. 3. p. 48*.——At the Cape there is an animal which approaches the fox. Gesner and others call it the *Cross Fox*. The Europeans of the Cape give it the name of *Jackal*, and the Hottontots that of *Zenlie* or *Kenlie*; *Id. ib.* p. 62.

‡ I remarked, that there are no wolves in Hyrcania, nor in the other provinces of Persia; but that we every where meet with the *chacal*, whose cry is frightful. It is particularly fond of dead bodies, which it tears out of the graves; *Voyage de Chardin, tom. 2. p. 29*.

state, and as there is always a considerable difference both in the size and dispositions of these animals, we shall regard them as distinct species, till it be proven by facts that they intermix and produce together. Our conjecture concerning the difference of these two species is the better founded, as it seems to accord with the opinion of the antients. Aristotle, after mentioning the wolf, the fox, and the hyaena, gives some obscure intimations with regard to two other animals of the same genus, the one under the name of the *panther*, and the other under that of *thos*. The translators of Aristotle have rendered *panther* by *lupus canarius*, and *thos* by *lupus cervarius*. From this interpretation, it is obvious, that they considered the panther and thos to be animals of the same species. But I demonstrated, under the article *Lynx*, that the *lupus cervarius* of the Latins is not the *thos* of the Greeks. This *lupus cervarius* is the same with the *chaus* of Pliny, and with our lynx, which has not a single character that agrees with the *thos*. Homer, when celebrating the prowess of Ajax, who alone attacked a band of Trojans, in the midst of whom Ulysses found himself engaged, after being wounded, compares him to a lion, who suddenly falls upon a troop of *thos* collected round a stag at bay, disperses, and pursues them, as mean and dastardly animals. The commentator of Homer interprets the word *thos* by *panther*, which, he says, is a kind of weak, timid

timid wolf. Thus the thos and panther have been regarded as the same animal by several ancient Greeks. But Aristotle appears to have distinguished them, though he has not assigned to them different characters: 'The internal parts of the *thos*,' says he, 'are similar to those of the wolf * They copulate like dogs †, and produce two, three, or four young, who are born blind. The body and tail of the thos are longer than those of the dog; but, though the former is not so tall, he is extremely nimble, and leaps to a great distance. The lion and thos are enemies ‡, because they both feed upon flesh, and must, therefore, dispute about their prey. . . . The thos loves men §, and never attacks them; neither does he seem to be much afraid of them. He fights with the dog and the lion. For this reason the lion and thos are never seen in the same places. The smallest thos are the best. There are two species of them, and some extend them to three.' Aristotle says no more on the subject of the thos, and he says still less concerning the panther. It is mentioned only in one passage, namely, in the 35th chapter of the 16th book of his history of animals: 'The panther produces four young, which are blind at

* Aristot. hist. anim, lib. 2. cap. 17.

† Idem, lib. 6. cap. 35.

‡ Idem, lib. 9. cap. 1.

§ Idem, lib. 9. cap. 44.

‘at birth, like the young wolves.’ From comparing these passages with that of Homer, and those of other Greek authors, it appears to be almost certain, that the thos of Aristotle is the large jackal, and that the panther is the small jackal, or adive. We see that he admits the existence of two species of thos; that he mentions the panther but once, and when treating of the thos: It is therefore probable, that this panther is the small kind of thos; and this probability becomes almost a certainty from the testimony of Oppian *, who ranks the panther among the number of small animals, such as the cats and dormice.

Hence the thos is the jackal, and the panther the adive: And, whether they constitute two species, or but one, it is certain, that all the antients have said, with regard to the thos and panther, applies to the jackal and adive, and to no other animals. If we have remained unacquainted with the true meaning of these names till now, it must be ascribed to the ignorance of the translators, and of our modern naturalists.

Though the species of the wolf approaches near to that of the dog, yet the jackal is interposed between them. *The jackal or adive*, as Belon remarks, *is an animal between a wolf and a dog.* With the ferocity of the wolf, he possesses a portion of the familiarity of the dog. His voice is a howling, mixed with barks and groans.

* Oppian. de venatione, lib. 2.

groans *. He is more clamorous than the dog, and more voracious than the wolf. He never goes alone, but always in packs of twenty, thirty, or forty. They assemble every evening for the purposes of war, and of hunting. They feed upon small animals, and render themselves formidable to the larger species by their numbers. They attack every kind of cattle and poultry almost in the sight of men. They enter with insolence and boldness into the sheep-folds, the stables, and the cow-houses; and, when they find nothing better, they devour the leather of the harnessing, boots, and shoes, and carry off what they have not time to swallow. When live prey fails them, they dig up the bodies of men from their graves. The inhabitants

* It is of a fine yellow colour, smaller than a wolf, goes always in packs, and yelps during the whole night. . . It is so voracious, and so complete a thief, that it carries off not only what is good to eat, but hats, shoes, bridles, and every thing it can lay hold of; *Obs. de Belon*, p. 16. — Jackal pene omnem orientem inhabitat; bestia astuta, audax, et furacissima est. . . Interdiu circa montes latet, noctu pervigil et vagus est: Catervatim praedatum excurrit in rura et pagos. . .

Ululatum noctu edunt execrabilem ejulatu humano non diffimilem, quem interdum vox latrantium quasi eantem interstrepit: Unique inclamanti omnes acclamant, quotquot vocem e longinquo audiunt; *Koempfer, ambent. exotic. pag. 173.* —

About the canal of the Black sea, there are many *Jackals* or wild dogs, which resemble foxes, particularly in their muzzle. It is thought that they are engendered between wolves and dogs. In the evening and night they make frightful howlings. . . They are very mischievous, and as dangerous as wolves; *Voyage de Corneille le Brun, p. 56.*

tants are obliged to stick the earth of their sepulchres full of large spines, in order to prevent these animals from scraping and digging; for a thickness of several feet of earth is not sufficient to prevent them from accomplishing their purpose *. They go in packs, accompany this exhumation with mournful cries, and, when once accustomed to human bodies, they never fail to frequent the church-yards, to follow armies, and to attend the caravans. They may be considered as the ravens among quadrupeds. The most putrid flesh does not disgust them. Their appetite is so perpetual and so vehement, that the driest leather, skins, tallow, and even the ordure of animals, are equally welcome to them. The hyaena has the same taste for putrid flesh: It likewise digs dead bodies out of their graves; and, from this practice, these animals, though very different from each other, have often been confounded. The hyaena is a solitary, silent, savage animal, which, though much stronger than the jackal, is less troublesome, and contents

VOL. VII.

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itself

* The adives are very fond of putrid bodies, and particularly of human bodies. When the Christians inter any person in the fields, they make a very deep pit: But even this precaution is insufficient, unless the earth be beat hard, and mixed with stones and spines, which wound the animals, and prevent them from digging farther. In the Arabian language, the name *adive* signifies a *wolf*. Its figure, its hair, and its voracity, are analogous to this name; but its size, its familiarity, and its stupidity, convey a different idea of it; *Voyage du P. Fr. Vincent Marie, ch. 13.*

itself with devouring the dead, without disturbing the living. But all travellers complain of the cries, the robberies, and the gluttony of the jackal*, which unites the impudence of the dog with the dastardliness of the wolf, and, participating of the nature of each, seems to be an odious creature, composed of all the bad qualities of both.

S U P P L E M E N T.

I here give the figure of a jackal, which seems to be the small jackal or *adive*. The drawing was sent to me from England, under the simple denomination of *jackal*. Mr Bruce assures me, that the species here represented is common in Barbary,

* Jackals are in so great plenty about the gardens, that they pass in numbers, like a pack of hounds in full cry, every evening, giving not only disturbance by their noise, but making free with the poultry, and other provisions, if very good care is not taken to keep them out of their reach; *Russel's Natural History of Aleppo*.—Around Mount Caucasus there are many jackals. This animal resembles the fox. He digs dead bodies out of their graves, and devours animals and carrion. In the East, the dead are interred without coffins, or clothes of any kind. I have often seen large stones rolled upon graves, to prevent these animals from devouring the bodies. Mingrelia is infested with jackals. They frequently surround the houses, and make dreadful howlings. But, what is worse, they make great havock among the cattle and horses; *Voyage de Chardin*, p. 76.



A. B. G. sculp.

JACKAL-ARBE.

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Barbary, where it is called *thaleb*; and, as the figure has no resemblance to the description we have given of the jackal, I am persuaded that it is the *adive*, or small jackal, which differs from the large kind both in figure and in manners; for the small species may be tamed, and kept in a domestic state; and I never heard that the large jackal was ever rendered domestic.

The

AND V. E. I. A. D. I. A. A

The ISATIS, or ARCTIC DOG.

IF a number of resemblances, joined to a perfect conformity of internal parts, were sufficient to constitute unity of species, the wolf, the fox, and the dog, would form but one; for the resemblances are more numerous than the differences, and the similarity of the internal parts

is

* Arctic dog with a sharp nose; short rounded ears, almost hid in the fur; long and soft hair, somewhat woolly; short legs; toes covered on all parts, like that of a hare, with fur; tail shorter than that of the common fox, and more bulgy. This animal is of a bluish gray, or ash colour, and sometimes white. The young of the gray are black before they come to maturity. The hair is much longer in winter than summer, as is usual with animals of cold climates; *Pennant's Synops. of quad. p. 155.*

Isatis, the name given by *Gmelin* to this animal; it is called *Peszi* in the Russian language; *Voyage de Gmelin, tom. 2. p. 215.*

Vulpes alba; *Vulpes crucigera*; *Aldrov. de quad. digit. p. 221.*

Canis hieme alba, aestate ex cinereo caeruleus; *Briffon. quad. p. 174.*

Fox; *Marten's Spitzberg. p. 100. Egede Greenl. p. 62. Crantz Greenl. vol. 1. p. 72.*

Ashen-coloured fox; *Schoeffer Lapland, p. 135.*

Canis lagopus, canda recta, apice concolore; *Linn. Syst. Nat. p. 59.*

Fial racka; *Fauth Succ. No. 8.*

Bahus; *Kalm, p. 236.*

Isatis; *Nov. Com. Petrop, tom. 5. p. 358.*

is complete. These three animals, however, not only constitute three distinct species, but are so distant from each other, as to admit intermediate species. The jackal is an intermediate species between the dog and wolf; and the isatis is placed between the fox and dog. The isatis has hitherto been regarded as a variety of the fox. But the description given of it by Gmelin demonstrates it to be a different species.

The isatis is common in all the northern regions bordering on the frozen sea, and is never found on this side of the 60th degree of latitude. In the figure of the body, and the length of the tail, he is perfectly similar to the fox; but his head has a greater resemblance to that of the dog. His hair is softer than that of the common fox, and his fur is sometimes white, and sometimes of a bluish ash-colour. The head is short in proportion to the body; it is broad near the neck, and is terminated by a sharp muzzle. The ears are almost round. He has five toes and five claws on the fore feet, and only four on those behind. The penis of the male is scarcely so thick as a goose quill. The testicles are as large as almonds, and are so concealed with the hair, that it is difficult to perceive them. The hair over the whole body is about two inches long, smooth, bushy, and soft as wool. The nostrils and under lip are naked, and the skin of these parts is black.

270 THE IBATIS, OR

In both male and female, the stomach, viscera, intestines, and spermatic vessels, are similar to those of the dog: There is even a bone in the penis of the male, and the whole skeleton resembles that of a fox.

The voice of the *ibatis* partakes of the barking of a dog and the yelping of a fox. The merchants who deal in furs distinguish two kinds of *ibatis*, the one white and the other of a bluish ash-colour. The latter are most esteemed, and their price advances in proportion to their blueness or brownness. This difference of colour is not sufficient to constitute a difference of species; for M. Gmelin was assured by the most experienced hunters, that, in the same litter, some of the young are white, and others ash-coloured.

The *ibatis* is an animal peculiar to the northern regions. He prefers the coasts of the frozen sea, and the banks of the rivers which fall into it. He loves open countries, and never frequents the woods. He is found in the coldest and most naked mountains of Norway, Lapland, Siberia, and Iceland*. These animals copulate in the month of March; and, their organs of generation being formed like those of the dog, they cannot separate for some time. Their rutting season

* It is probably by sailing on boards of ice that the foxes have found their way into Iceland; where they are very numerous. Some of them are black; but they are commonly gray or blue in summer, and white in winter; in which last season their fur is best; *Anderson's Nat. Hist. of Iceland, tom. 1. p. 56.*

season lasts fifteen days, or three weeks, during which they are always in the open air; and afterwards they retire to their holes, which are narrow, very deep, and have several entrances. They keep their holes clean, and make beds of moss in them. The time of gestation, like that of the bitch, is about nine weeks. The females bring forth about the end of June or beginning of May, and generally produce six, seven, or eight at a litter*. Those which are to be white, are yellowish at birth, and those which are to be of a bluish ash-colour, are blackish, and their hair is then very short. The mother suckles and attends them in the hole during five or six weeks, after which, she makes them go out, and brings them victuals. In the month of September, their hair is more than half an inch long. At this period, those which are to be white, are almost entirely so, except a brown band along the back, and another across the shoulders. It is then that the isatis is called the *cross-fox*†. But this brown cross disappears before winter, when they are entirely white, and their hair more than two inches in length. About the month of May, the hair begins to fall off, and the moulting is finished.

* M. Gmelin says, from the testimony of hunters, that these animals sometimes produce twenty or twenty-five at one litter. But this fact is extremely suspicious.

† From this circumstance, it is probable that the *vulpes crucigera* of Gesner, *Icon. quad. p. 190.* and of Rzaczinski, *Hist. Nat. Pol. p. 231.* is the same animal with the isatis.

ed in July: Hence the fur is good in winter only.

The isatis lives upon rats, hares, and birds; and, in seizing them, he uses as much address as the fox. He swims across lakes in quest of the nests of ducks and of geese, and eats the eggs and the young. In these cold and desert regions, he has no enemy but the glutton, who lies in ambush for him.

As the wolf, the fox, the glutton, and the other animals which inhabit the northern regions of Europe and Asia, have passed from the one continent to the other, and are found in America, the isatis ought likewise to be found there; and I presume, that the silver-gray fox of North America, of which Catesby* has given a figure, is the isatis, and not a simple variety of the fox.

S U P P L E M E N T.

In a letter from London, dated the 19th day of February 1768, Mr Colinson communicates the following notice.

‘ My friend M. Paul Demidoff, a Russian, who
‘ is an admirer of your works, sends you a draw-
‘ ing of an undescribed animal, called *Cossac*. It
‘ was

* Nat. Hist. of Carolina, tom. 2. fig. p. 78.

Plate CCXXXIX.



A. Hall, sculp.

ISATIS.

' was brought from the vast deserts of Tartary,
 ' situated between the rivers Jaïck, Emba, and
 ' the sources of the Irtysh. These coffacs are so
 ' numerous in that part of the country, that the
 ' Tartars transport annually 50,000 of their skins
 ' to Oremburgh, from whence they are carried
 ' to Siberia and Turkey. From the point of
 ' the muzzle to the origin of the tail, this ani-
 ' mal is about one foot and eight inches in
 ' length; and his tail is ten inches long.

' The shape of the head, the mild aspect, and
 ' the barking of this animal, seem to bring him
 ' near to the dog. His tail, however, and his
 ' fine soft fur, make him approach the fox.
 ' His blood is ardent, and his breath has a dis-
 ' agreeable odour, like that of the jackal and
 ' wolf.'

From the drawing, and still more from the
 short descriptions of M. Demidoff and M. Gmelin,
 this animal appears to be the isatis; and, for
 that reason, I have caused it to be engraven.

THE GLUTTON.

THE glutton, with his gross body and short legs, is nearly of the figure of the badger; but he is double the size. His head is short, his eyes small, his teeth very strong, his body squat, and his tail rather short than long, and well furnished with hair at the extremity. He is black on the back, and of a brownish red on the flanks. His fur is exceedingly beautiful, and in great request. He is common in Lapland, and in all the countries bordering on the northern ocean, both

* *Glutton* in French; *jerff* in Swedish; *wilfrass* in German; *rosomack* in Sclavonian; *carcajou* in Canada; *quincajou* in other parts of North America.

Inter omnia animalia quae immani voracitate creduntur insatiabilia, *gulo*, in partibus Sueciae septentrionalis praecipuum suscepit nomen, ubi patrio sermone, *jerff*, dicitur, et lingua Germanica, *wilfrass*; Sclavonice, *rosomaka*, a multa commestione; Latine vero non nisi fictitio nomine *gulo*, videlicet a gulositate, appellatur; *Olai Magn. Hist. de Gent. sept. p. 138.*

Gulo a voracitate insatiabili; the Glutton; *Charleton, Onom. p. 15.*

Rosomaka; *Euf. Nieremb. Hist. Nat. peregrin. p. 188.* *Rzacinski, Hist. Nat. Pol. p. 339.*

Gulo *wilfrass*, *boophagus*, *magnus vorator*, *rosomacka*; *Klein. quad. p. 83.*

Mustela gulo, pedibus fissis, corpore rufo-fusco, medio dorso nigro; *Linn. Syst. Nat. p. 67.*

Jarff, *siltress*; *Faun-Succ. No. 14.*

Hyaena; *Briffon, quad. p. 169.* *Ysbrandt-Ides Trav. Harris's Collect. vol. 2. p. 923.*

both in Europe and Asia. In Canada, and other parts of North America, he is found under the name of *carcajou*. It is probable, that the animal found near Hudson's Bay, called *quick-batch*, or *wolverene*, by Mr Edwards *, is the same with the Canadian *carcajou*, and the European glutton. It is also probable, that the animal mentioned by Fernandez, under the name of *tepeytzcuitli*, or *mountain dog*, is the glutton, whose species has been diffused as far as the desert mountains of New Spain †.

Olaus Magnus seems to be the first author who takes notice of this animal. He says ‡, that it is of the size of a large dog; that it has the ears and face of a cat, strong feet and claws, long, brown, bushy hair, and a rough tail like that of the fox, but shorter. The glutton, according to Schoeffer §, has a round head, strong sharp teeth, like those of the wolf, black hair, and a thick body and short legs, like those of the otter. La Hontan ¶, who first mentioned the *carcajou* of North America, remarks, 'Figure to * yourself a double sized badger, which is the most

* Edwards's history of birds, p. 103.

† Animal est parvi canis magnitudine audacissimumque; aggreditur enim cervos et quandoque etiam interficit; corpus universum nigrum: Pectus ac collum candens, pili longi, et cauda longa, et caninum quoque caput, unde nomen; Fernandez, *Hist. anim. Nov. Hisp.* pag. 7. cap. 21.

‡ Olaus Magnus de Gent. Septent. p. 138.

§ Hist. de la Lapponie, par J. Schoeffer, p. 314.

¶ Voyage de la Hontan. tom. 1. p. 96.

‘ most perfect idea I can give you of this animal.’ According to Sarrazin *, who probably had only seen young ones, the carcajous exceed not two feet in length, and their tail is eight inches. ‘ They have,’ says he, ‘ a very thick, short head, small eyes, and very strong jaws, furnished with thirty-two sharp teeth.’ The quick-hatch of Edwards †, which appears to be the same animal, was, this author remarks, double the size of a fox: Its back is arched, its head low, its legs short, its belly almost trailing on the ground, and its tail of a middling length, and bushy toward the extremity. All these authors agree, that this animal is only to be found in the northern regions of Europe, Asia, and America. M. Gmelin ‡ is the only writer who seems to think that the glutton travels into warm countries. But this fact appears to be very suspicious, if not altogether false. Gmelin, like some other naturalists §, has perhaps confounded the hyaena of the South with the glutton of the North, which, though they resemble each other in natural dispositions, and particularly in voraciousness, are very different animals.

The

* Hist. de l’Acad. des Sciences, année 1713, p. 14.

† Edwards’s history of birds, p. 103.

‡ The glutton is the only animal, which, like man, can live equally well under the Line and under the Pole. He is every where to be seen: He runs from south to north, and from north to south, provided he can find any thing to eat; *Voyage de Gmelin, tom. 3. p. 492.*

§ Brisson, regn. anim. p. 235.

30 The legs of the glutton are not made for running; he even walks slow. But this defect of nimbleness he supplies with cunning. He lies in wait for animals as they pass. He climbs upon trees, in order to dart upon his prey, and seize it with advantage. He throws himself down upon elks and rein-deer, and fixes so firmly on their bodies with his claws and teeth, that nothing can remove him. In vain do the poor victims fly, and rub themselves against trees. The enemy, attached to their crupper or neck, continues to suck their blood, to enlarge the wound, and to devour them gradually, and with equal voracity, till they fall down *. It is inconceivable how long the glutton can eat, and how much flesh he can devour at a meal.

What is related by travellers, concerning this animal, is perhaps exaggerated. But, though a great part of their narrations were rejected, what remains † is sufficient to convince us, that
the

* The glutton is a carnivorous animal, somewhat less than the wolf. His hair is coarse, long, and of a brown colour, approaching to black, especially on the back. He climbs upon a tree to watch for his prey; and, when any animal passes, he springs down upon its back, fixes himself firmly with his claws, and continues to gnaw with his teeth, till the poor animal, after many fruitless efforts to get rid of so troublesome a guest, at last falls down, and becomes a victim to this crafty enemy. Three strong greyhounds are necessary to kill the glutton. The Russians use the glutton's skin for muffs, and borders to their caps; *Relation de la Grande Tartarie*, p. 8.

† Hoc animal voracissimum est; reperto namque cadavere,
tantum

the glutton is much more voracious than any of our carnivorous animals: From this circumstance he has been called the *vulture of quadrupeds*. More insatiable and rapacious than the wolf, if endowed with equal agility, the glutton would destroy all the other animals. But he moves so heavily, that the only animal he is able to overtake in the course is the beaver, whose cabbins he sometimes attacks, and devours the whole, unless they quickly take to the water *; for the beaver outstrips him in swimming. When he perceives that his prey has escaped, he seizes the fishes; and, when he can find no living creature to destroy, he goes in quest of the dead, whom he digs up from their graves, and devours with avidity.

Though the glutton employs considerable art and address in seizing other animals, he seems to possess no other talents but those which relate to

tantum vorat, ut violento cibo corpus instar tympani extendatur; inventaque angustia inter arbores se stringit ut violentius egerat: Sicque extenuatum revertitur ad cadaver, et ad summum usque repletur, iterumque se stringit angustia priore, &c.; Olai Magni hist. de Gent. sept. pag. 138.

* The carcajou is a small animal, but very strong and fierce. Though carnivorous, he is so slow and heavy, that he may be said rather to trail upon the snow, than to walk. The beaver is the only animal he is able to overtake; and this exploit he can perform in summer only, when the beavers are out of their cabbins: But, in winter, he endeavours to demolish their cabbins, and seize the inhabitants, which he is seldom able to accomplish; because the beavers secure their retreat under the ice; *Hist. de l'Acad. des Sciences, année 1713. p. 14.*

to appetite. It would appear that he even wants the common instinct of self-preservation. He allows himself to be approached by men, or comes up to them *, without betraying the smallest

* The workmen perceived at a distance an animal approaching with slow and solemn steps. Some of them imagined it to be a bear, and others a glutton. They advanced, and found that it was a glutton. After giving it some severe blows with a cudgel, they seized it alive, and brought it to me. . . . After the many reports I had for several years heard from the Siberian hunters, concerning the address of the glutton in seizing other animals, and supplying, by cunning, that swiftness which Nature has denied him, and in avoiding the snares of men, I was greatly surprised to see this one come as deliberately up to us, as if he had been in quest of his own destruction. Ysbrandt-ides calls the glutton a mischievous animal, which lives only on flesh. 'He is accustomed,' this author remarks, 'to conceal himself in the trees, and to lie in ambush, like the lynx, till a stag, a rain-deer, a roebuck, a hare, &c. passes below, and then darts down, like an arrow, upon the animal, sinks his teeth into its body, and gnaws the flesh till it expires; after which, he devours it at his ease, and swallows both the hair and the skin. A waywode, who kept a glutton for his pleasure, threw it one day into the water, and let loose two dogs at it. But the glutton soon fixed upon the head of one of the dogs, and kept it under the water till the animal was suffocated.' . . The address employed by the glutton, continues M. Gmelin, in seizing animals, is confirmed by all the hunters. . . Though he devours all kinds of animals, whether alive or dead, he prefers the rain-deer. . . He watches large animals like a robber on the highways, or he surprises them while asleep. . . He goes in quest of the snares laid by the hunters for different species of animals; but he never allows himself to be entrapped. . . The hunters of the blue and white foxes (isatis), which frequent the coasts of the frozen sea, complain much of the mischief done them by the glutton. . . With much propriety

smallest apprehension. This indifference, which seems to be the effect of imbecillity, proceeds, perhaps, from a different cause. It is certain, that the glutton is not stupid, since he finds means to satisfy his appetite, which is always vehement and pressing. Neither is he deficient in courage, since he indiscriminately attacks all animals he meets with, and betrays no symptoms of fear at the approach of man. Hence, if he wants attention to himself, it proceeds not from indifference to his own preservation, but from the habit of security. As he lives in a country which is almost desert, he seldom sees men, who are his only enemies. Every time he tries his strength with other animals, he finds himself their superior. He goes about with perfect confidence, and never discovers the smallest mark of fear, which always supposes some dolorous event, some experience of weakness. Of this we have an example in the lion, who never turns away from man, unless he has experienced the force of his arms: And the glutton, trailing

propriety they call him the *glutton*; for the quantity he eats is incredible. Though I frequently inquired of professed hunters, I never heard that this animal, when gorged, squeezed himself between two close trees, in order to force out the contents of his stomach, and to make room for a fresh gratification of his insatiable appetite. This appears to have been the fable of a naturalist, or the fiction of a painter; *Voyage de Gmelin, tom. 3. p. 492.*—*Nota.* Olaus first put this fable in writing, and Gesner copied the figure of it, which had been designed by a painter.

trailing along the snows of his desert climate, remains always in perfect safety, and reigns, like the lion, not so much by his own strength, as by the weakness of the animals around him.

The isatis is not so strong, but much more nimble than the glutton, whom it serves as a provider. The glutton follows the isatis in the chase, and often carries off the whole, or a part of its prey; for, when the glutton arrives, the isatis, to avoid its own destruction, flies off with precipitation. Both these animals dig holes in the earth; but their other manners are different. The isatis often goes in packs: But the glutton travels alone, or sometimes with his female. The male and female are generally found together in the same hole. Even the most courageous dogs * fear to approach, or to combat the glutton. He defends himself with his claws and feet, with which he inflicts mortal wounds. But, as he cannot escape by flight, he is easily despatched by the hunters.

The flesh of the glutton, like that of all rapacious animals, is very bad †. He is hunted

VOL. VII

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only

* Via vix conceditur ut a canibus apprehendatur, cum ungulas, dentesque adeo acutos habeat, ut ejus congressum formident canes qui in ferocissimos lupos vires suas extendere solent; *Olai Mag. Hist. de Gent. sept. pag. 139.*

† Caro hujus animalis omnino inutilis est a humanam escam, sed pellis multum commoda ac pretiosa. Candet enim fuscata nigredine instar panni damasceni diversis ornata figuris, atque pulchrior in aspectu redditur, quo artificum diligentia

only for his skin, which makes a most magnificent fur *. It is only excelled by the furs of the sable and black fox; and, when well chosen, and properly prepared, it is said to have a finer lustre than any other, and, upon a beautiful black ground-colour, to reflect and variegate the light, like damask silk †.

S U P P L E M E N T.

I am now enabled to give a figure of the glutton. This animal was sent to me alive from the most northern parts of Russia; and yet he lived more than eighteen months at Paris. He was

so
ligentia et industria colorum conformitate in quorumque vestium genere fuerit coadunata; Olai Mag. Hist. de Gent. sept, pag. 139.

* The glutton is said to be an animal peculiar to the north. . . It is of a blackish colour; and the hair is as long as that of the fox, but much finer and softer; which renders the skins very precious even in Sweden; *Appollon. Megabeni Hist. Gulonis.*

† The gluttons are common in Lapland. . . . The skin is extremely black, and the hair reflects a kind of shining whiteness, like the flowered satins and damasks. Some people compare it to the skin of the sable, except that the hair of the latter is softer and more delicate. This animal lives both on the earth and in the water, like the otters. . . . But the glutton is much larger, and more voracious than the otter. . . . He not only hunts wild and domestic animals, but even fishes; *Hist. de la Lapponie, par Schoeffer, p. 314.*

so tame, that he discovered no ferocity, and did not injure any person. His voracity has been as much exaggerated as his cruelty. He indeed eat a great deal; but, when deprived of food, he was not importunate. The animal is very well represented in the plate; but we shall likewise add a description of him. He is two feet two inches long, from the point of the nose to the origin of the tail. The muzzle, and as far as the eye-brows, is black. The eyes are black and small. From the eye-brows to the ears, the hair is a mixture of white and brown. The ears exceed not an inch in length, and the hair on them is short. Below the under jaw, as well as between the fore feet, the hair is spotted with white. The length of the fore legs is eleven inches, and that of the hind one foot. The tail, including four inches of hair at its extremity, is eight inches long. The four legs, the tail, the back, as well as the belly, are black. Near the navel is a white spot, and the organs of generation are reddish. The under hair, or down, is white: His fore feet, from the heel to the extremity of the claws, are three inches nine lines in length. The five claws are very crooked and well separated. The middle claw is an inch and a half long. There are five callosities under the toes; four of them form a kind of semicircle below the foot, the other is on the heel. On the hind feet, there are five claws, nine callosities, and no heel.

The

The breadth of the fore feet is two inches and a half. The length of the hind feet is four inches nine lines, and their breadth two inches nine lines. He has six cutting teeth in the upper jaw, of which one on each side is larger than the other four; and five grinders, two of which are much larger than the other three. In the under jaw, he has five grinders, one of which is very thick. There are a few hairs, about two inches long, round the mouth, and above the eyes.

This animal is pretty mild. He avoids water, and dreads horses, and men dressed in black. He walks by a kind of leaps; and eats pretty voraciously. After taking a full meal, he covers himself in his cage with straw. When drinking, he laps like a dog. He utters no cry. After drinking, with his paws he throws the remainder of the water on his belly. He is almost perpetually in motion. If allowed, he would devour more than four pounds of flesh every day. He eats no bread; and devours his food so voraciously, and almost without chewing, that he is apt to choke himself.

The glutton is common in most of the northern regions of Europe, and even of Asia; but, in Norway, according to Pontoppidan, he is chiefly confined to the diocese of Drontheim. This author remarks, that the skin of the glutton is very valuable; that he is not shot with firearms, to prevent his skin from being damaged; and

and that the hair is soft, and of a black colour, shaded with brown and yellow.

We have likewise given the figure of an American animal, a stuffed skin of which was sent to M. Aubry, curate of St. Louis, under the denomination of *Carcajou*. But it has no affinity to that animal, which we remarked was the same with our European glutton; for, as its claws are not adapted for tearing prey, but for digging the earth, we consider it as a neighbouring species, or even as a variety, of the badger. When compared with the figure we have given of the badger, the resemblance is apparent; from which it differs, however, by having only four toes on the fore feet. But the fifth toe, which was apparently wanting, might have been destroyed in this dried skin. In this character, it differs equally from the *carcajou* and the glutton; because both of them have five toes on the fore feet. Hence it is doubtful whether this animal be the true *carcajou*. We shall here add a description of the stuffed skin, which is very well preserved in the cabinet of M. Aubry. He was assured that it was brought from the country of the *Eskimaux*. From the end of the muzzle to the origin of the tail, it was two feet two inches long. Though it has a great resemblance to the badger, it differs from him in the colour and quality of the hair, which is softer, longer, and more silky; and, by this character alone, it approaches

• Pontoppidan's Natural History of Norway.

proaches to the carcajou, or the glutton of Europe. It is nearly of the colour of the lynx, being grayish white, with white stripes on the head, but different from those of the badger. The ears are short and white. It has thirty-two teeth, six incisors, two large canine teeth, and four grinders on each side; but the badger has only six grinders. The hairs on the body, which are commonly four and a half or five inches long, are of four colours, namely, from the root to near the middle, they are a bright brown, then a bright yellow, then black, till near the point, which is white. The under part of the body is covered with white hairs. On the legs the hair is of a deep brown colour. There are four toes only on the fore feet, and five on those behind. The claws of the fore feet are very large; the longest on the fore feet are sixteen lines, and the longest on the hind feet only seven. The trunk of the tail is three inches eight lines in length, and it is terminated and surrounded by long yellow hairs.

I am convinced that the American carcajou is the same animal with the European glutton, or, at least, that it is a species very nearly allied to the glutton. But I must remark, that I committed a mistake, occasioned by a similarity of names, and some natural habits, common to two different animals. I imagined that the kinkajou was the same animal with the carcajou. This error I discovered by seeing two animals, the
one

one at the fair of St Germain, in 1773, announced by a bill as *an animal unknown to all the naturalists*, which was true. Another, altogether similar, is now alive at Paris, in the possession of M. Chauveau, who brought it from New Spain. We believe it to be the true kinkajou, and have here given a figure of it. M. Chauveau imagined that it might be an *acouchi* or a *coati*. He remarks, indeed, that it has neither the long nose nor the annulated tail of the *coati*; but that it has the same hair, the same members, the same number of toes, and the same canine teeth, which are angular and chamfered on the sides. M. Chauveau acknowledges, that it differs from the *coati* by its prehensile tail, with which, when descending, it suspends itself, and adheres to every thing it can lay hold of.

‘This animal,’ says M. Chauveau, ‘never stretches out his tail, unless when his feet are secure. He employs it with greater dexterity in seizing and bringing to him such things as he cannot otherwise reach. He lies down and sleeps as soon as day appears, and awakes at the approach of night. His vivacity is then extremely great. He climbs with great facility, and searches about continually. He tears every thing he finds, either for amusement or in quest of insects. Were it not for this fault, he might be left at liberty. Even before his arrival in France, he went about freely during the night, and next day he was
‘always

' always found lying in the same place. He
 ' may be wakened during the day; but the rays
 ' of the sun seem to be extremely incommodi-
 ' ous to him. He is careſſing, without being
 ' tractable :. He diſtinguiſhes his maſter alone,
 ' whom he follows. He drinks water, coffee,
 ' milk, wine, and even aquavita; which laſt,
 ' when ſugar is added to it, he drinks till he be
 ' intoxicated, and continues to be ſick for ſeveral
 ' days. He eats indiſcriminately bread, meat,
 ' pot-herbs, roots, and fruits. His common
 ' food, for a long time, has been bread ſoaked
 ' in milk, fruits, and pot-herbs. He is paſſion-
 ' ately fond of odours, ſugar, and confections.

' He attacks poultry, and always ſeizes them
 ' under the wing. He ſeems to drink their
 ' blood; for he never devours them. When
 ' he has his choice, he prefers a duck to a hen;
 ' and yet he is afraid of water. He has differ-
 ' ent cries: When alone during the night, he
 ' utters ſounds nearly ſimilar to the barking of
 ' a dog, and he always commences with ſnee-
 ' zing. When he ſports, or receives any injury,
 ' he cries like a young pigeon. When he threa-
 ' tens, he whiſtles like a gooſe; and, when en-
 ' raged, his cries are loud and confuſed. He is
 ' never in a paſſion but when hungry. His
 ' tongue, which he ſometimes thruſts out, is
 ' immoderately long. The one in my poſſeſſion
 ' was a female; and, it is worthy of remark,
 ' that, during the three years ſhe has been in
 ' France,

‘ France, she was only once in season, and was
 ‘ then extremely furious.’

*The following is M. de Sève's description of a
 similar animal, exhibited at the fair of St Ger-
 main in the year 1773.*

‘ By its fur, it has a greater resemblance to
 ‘ the otter than to any other animal; but its
 ‘ toes are not connected by membranes. The
 ‘ tail is as long as the body; but that of the ot-
 ‘ ter is only half the length of its body. When
 ‘ walking, the length of its body gives it the air
 ‘ of a polecat. But the tail and figure of the
 ‘ head are different, and the latter has more re-
 ‘ semblance to that of the otter. The eye is
 ‘ larger than that of the polecat. The face has
 ‘ some resemblance to that of the small Danish
 ‘ dog. His tongue is long, thin, and smooth.
 ‘ He appears to be of a mild disposition, and
 ‘ licks the hand of any person. Last Lent, when
 ‘ I drew its figure, it was very gentle; but it
 ‘ has been rendered mischievous by being fre-
 ‘ quently irritated by the populace. At present,
 ‘ it sometimes bites after licking the hand. It
 ‘ is young, and its teeth seem not to be fully
 ‘ formed. It is of a restless disposition, and
 ‘ loves to climb. It often sits on end, scratches
 VOL. VII. O o ‘ itself

‘ itself with its fore feet like the apes, plays,
‘ folds its paws into each other, and performs
‘ many other monkey tricks. Like the squirrel,
‘ it holds fruits and other food between its two
‘ paws. Neither flesh nor fish is given to it.
‘ When irritated, it endeavours to leap upon the
‘ person, and its cry has a considerable resemblance
‘ to that of a large rat. Its fur has no
‘ odour. With great dexterity it hooks with its
‘ tail such things as it wants to lay hold of, and
‘ frequently hangs by the tail upon such bodies as
‘ it meets with. I have remarked, that its toes,
‘ which are of a considerable length, spontaneously
‘ unite, when it walks or climbs; and they
‘ spread not, like those of other animals, in the
‘ action of supporting itself. In fine, this animal,
‘ according to the account given by its master,
‘ came from the coast of Africa, where it
‘ was called *kinkajou*, and the species is said to
‘ be rare. This appellation, he supposed, was
‘ derived from the name of the island or country
‘ which it inhabits, being unable to learn any
‘ more from the person who sold it to him. I
‘ shall only say, that this *kinkajou*, which is a
‘ female, approaches nearer to the otter than to
‘ any other quadruped. Its hair is short and
‘ thick, mixed with some longer hairs. The
‘ hairs of the head, like those of the body and
‘ tail, are of an olive yellowish colour, mingled
‘ with gray and brown; and these colours vary
‘ according to the light in which they are viewed,
‘ ed,

' ed. The colour of each hair, through its
 ' greatest extent, is a grayish white, and a dusky
 ' greenish yellow at the point. The fur is mix-
 ' ed with other hairs, whose extremity is brown,
 ' beside large black hairs interspersed among the
 ' rest, which form bands on the sides of the eyes,
 ' and extend toward the front, and another band
 ' which vanishes near the neck. The eye is very
 ' similar to that of the otter. The pupil is small,
 ' and the iris is of a reddish colour. The muzzle
 ' is blackish brown, as well as round the eyes.
 ' As in small dogs, the end of the nose is flat,
 ' and the nostrils are much arched. The teeth
 ' are yellow, and thirty-two in number. The
 ' canine teeth are very large, the superior cross-
 ' ing the inferior. There are twelve cutting
 ' teeth, four canine, and sixteen grinders. The
 ' ears are longer than broad, rounded at the
 ' points, and covered with short hair, of the
 ' same colour with that on the body. The sides,
 ' throat, and inside of the legs, are of a golden
 ' yellow colour, which is extremely vivid in
 ' some places. The same golden colour prevails
 ' on some parts of the head and hind legs. The
 ' belly is grayish white, tinged in some places
 ' with yellow. The tail, which is every where
 ' covered with hair, is thick at the origin, and
 ' gradually tapers to a point at the extremity.
 ' When walking, the animal carries its tail ho-
 ' rizontally. The under part of the paws is
 ' naked, and of a vermilion colour. The claws
 ' are

‘ are white, hooked, and guttered below. The
 ‘ length of the whole animal is about two feet
 ‘ five inches.’

The similitude of the names *kinkajou* and *carcajou* led me, as well as other naturalists, to imagine, that they belonged to the same animal: In the following passage from Denis, formerly quoted in part only, where he tells us, that the *kinkajou*, which I then apprehended to be the *carcajou*, resembled the cat, I thought this traveller had been deceived; because all other travellers agree in making the figure of the *carcajou* similar to that of the glutton.

‘ The *kinkajou*,’ says Denis, ‘ has some resemblance to the cat with brownish red hair.
 ‘ Its tail is long, and erected on its back in two
 ‘ or three folds. It has claws, and climbs trees,
 ‘ where it lies in wait along the branches to dart
 ‘ down on its prey. In this manner it seizes
 ‘ the original, invests him with its tail, and gnaws
 ‘ his neck till he falls. Notwithstanding the
 ‘ swiftness of the original, and the force with
 ‘ which he rubs against the trees and brush-
 ‘ wood, the *kinkajou* never quits its hold; but,
 ‘ if he can reach the water, he is saved, because
 ‘ the *kinkajou* is then obliged to separate from
 ‘ him. Four years ago, a *kinkajou* attacked
 ‘ one of my heifers, and cut its throat. The
 ‘ *kinkajous* are hunted by the foxes. They
 ‘ go in quest of the *kinkajou* when he lies in
 ‘ wait

‘ wait for the original, and never fail to carry him off *.’

These facts correspond so well with the figure and description we have given of this animal, that we may presume that they relate to the same animal, and that the carcajou and kinkajou are two distinct species, who have nothing in common, except their darting upon the original and other quadrupeds, in order to drink their blood.

We formerly remarked, that the kinkajou was found in the mountains of New Spain : But he is likewise found in those of Jamaica, where the natives call him *poto*. Mr Colinson sent me a figure of this *poto* or kinkajou, which I have inserted, together with the following notice.

‘ The body of this animal,’ says Mr Colinson, ‘ is red, mixed with ash-colour. The hair is short, but very thick, the head rounded, the muzzle short, naked, and blackish : The eyes are brown, the ears short and round, and the hairs round the mouth are long ; but, as they lie flat on the muzzle, they do not form whisks. The tongue is narrow and long, and the animal often thrusts it three or four inches out of his mouth. The tail is of one uniform colour, and gradually tapers to a point : It is bended upwards when the animal walks, and has the prehensile faculty. The length of the

* Descript. geogr. et histor. des côtes de l’Amerique Septent. par M. Denis, tom. 2 p. 327.

‘ the creature is about fifteen inches, and that of the tail seventeen.

‘ This animal was taken in the mountains of Jamaica. He is mild, and may be handled without danger. He is drowsy during the day, and extremely vivacious in the night. He differs much from every other quadruped. His tongue is not so rough as that of the cat, or other animals of the *viverra* genus, to which he is related by the form of the head and claws. Round his mouth are many curled, soft hairs, from two to three inches long. The ears are situated nearly opposite to the eyes. When he sleeps, he rolls himself up into a ball, like the hedgehog, with his fore feet under his cheeks. With his tail, he can draw a weight equal to that of his own body.’

From comparing the two figures, and the descriptions of Mr Colinson and of M. Simon Chauveau, it is evident, that they both relate to the same animal, except some slight varieties, which change not the species.

The

Plate CCXL



A Bell's Engraving

GLUTTON



A. Bell, Sculp.

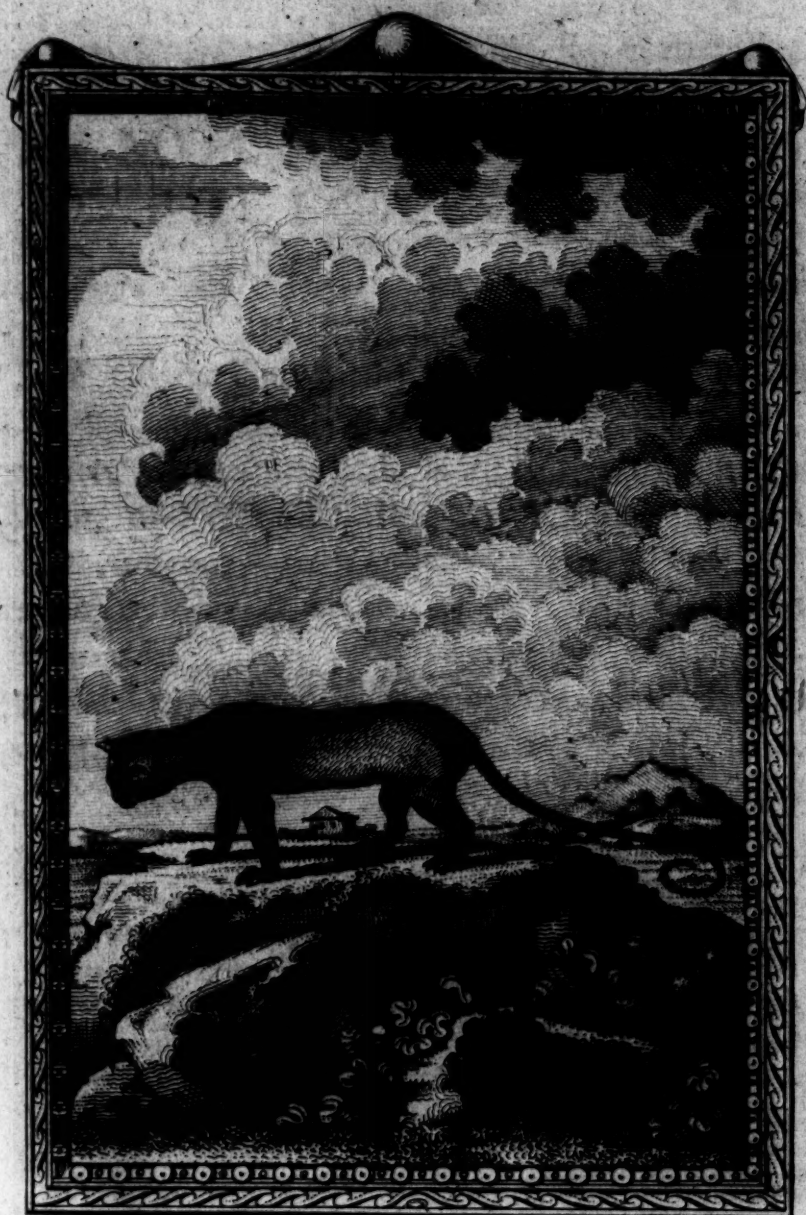
CARCAJOU.

Plate CCL.



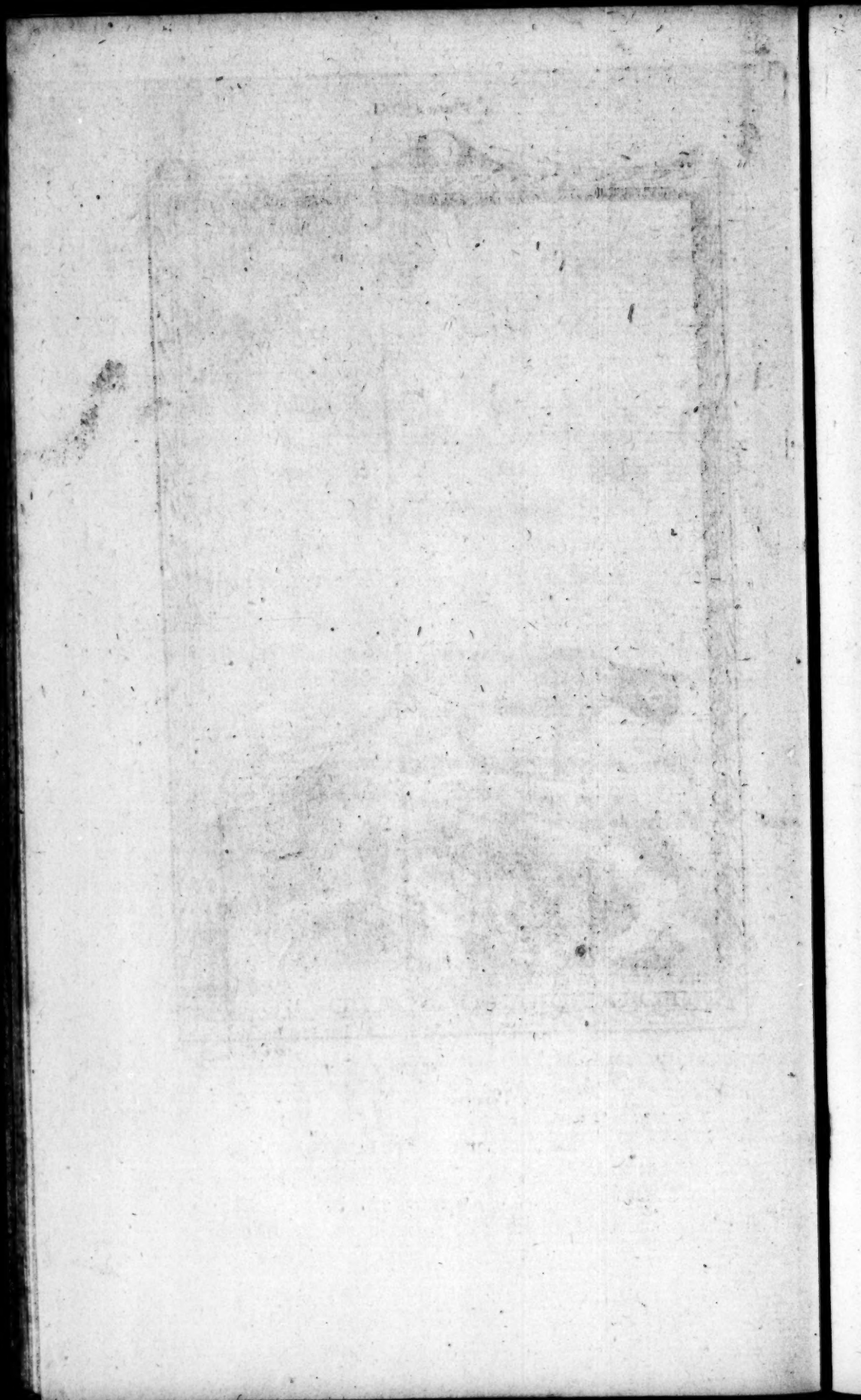
A. Ball & Co. Sculp. N.Y.

KINGAJOU.



Atoll & Co.

POTOT.



THE MOUFFETTES, or Stinking POLECATS.

WE have given the generic name *Mouffette* to three or four species of animals, which, when disturbed, send forth an odour so strong and offensive, that it suffocates like the subterraneous vapour called *mouffette*. These animals are found in all the southern and temperate regions of America*: They have been indistinctly mentioned by travellers under the names of *stinking beasts*, *devil's children*†, &c. and, not

* But, above all, I cannot pass over without mentioning a little creature, with a bushy tail, which we called a *buffer*, because when he sets sight on you, he stands vapouring and patting with his fore-feet upon the ground, and yet hath no manner of defence for himself, but with his breech; for, upon your approaching near him, he turns about his backside, and squirts at you, accompanied with the most abominable stink in the world; *Dampier, vol. 4. p. 96.*—In Peru, there are a number of small foxes, some of which send forth an intolerable smell. During the night, they come into the towns, and, however close the windows, their odour is felt at the distance of a hundred paces. Happily their number is not great, otherwise they would stink the whole world; *Hist. des Incas, tom. 2. p. 269.*

† There is a kind of martin, called the *devil's child*, or *stinking beast*, because, when pursued, its urine infects the air for more than a quarter of a mile all round. In other respects, it is a beautiful animal. It is of the size of a small cat,

not only confounded with each other, but with animals of very different species. Hernandez * has pretty clearly pointed out three of them. The first he calls *Ysquipatl*, a Mexican name, which, were it easily pronounced, we would retain. He has given a description and figure of it; and it is the same animal of which we have also a figure in Seba †. We shall call it *coase*, from the name *squash*, which it receives in New Spain ‡. The second Hernandez likewise calls

cat, but thicker. Its hair is lustrous, and grayish, with two white lines that form, on its back, an oval figure from the neck to the tail, which is bushy, like that of the fox, and erect, like that of the squirrel; *Hist. de la Nouv. France, par le P. Charlevoix, tom. 3. p. 333. Note.* This is the animal we shall here call the *conepate*, which is its Mexican name.

* *Ysquipatl* seu *Vulpecula* quae *Maizium torrefactum* aemulatur colore. *Genus primum.* . . . sunt et alia duo hujus *vulpeculae* genera eadem forma et natura quorum alterum *ysquipatl* etiam vocatum, fasciis multis candentibus distinguitur; alterum vero *conepatl* seu *vulpecula* puerilis *unica* tantum utrinque ducta, perque caudam ipsam eodem modo delata; *Hernand. hist. Mex. p. 332. fig. ibid.*

† Seba, vol. 1. p. 68. tab. 42. fig. 1.

‡ The *squashe* is a quadruped larger than a cat; and its head resembles that of a fox. He has short ears, and sharp claws, which enable him to climb trees like a cat. His skin is covered with fine, short, yellowish hair; and his flesh is very good and wholesome; *Dampier, vol. 3. p. 302.*

Stiffing weasel, with a short slender nose, short ears and legs, a black body, full of hair, and a long tail, of a black and white colour. The length, from nose to tail, is about eighteen inches; *Pennant's synops. of quad. p. 230.*

Ysquipatl; *Hernand. Mexic. p. 332. Raii synops. quad. p. 181. Klein. quad. p. 72.*

calls *ysquiepatl*, and which we shall denominate *chinche*, from the name it obtains in South America *. The third Hernandez calls *concepatl*, which name we shall preserve, and is the same animal with that given by Catesby, under the denomination of the *American polecat* †, and by

VOL. VII.

P p

Briffon,

Meles Surinamensis; *Briffon. quad. p.* 185.

Ichneumon de Ysquiepatl; *Seba, Mus. tom. 1. tab. 42.*

* The skunk weasel, with short rounded ears, black cheeks, and a white stripe from the nose, between the ears, to the back. The upper part of the neck, and the whole back are white, divided at the bottom by a black line, commencing at the tail, and passing a little way up the back. The belly and legs are white. The tail is very full of long coarse hair, generally black, and sometimes tipped with white; that figured by M. de Buffon is entirely white. It has very long nails on all the feet, like those on the fore feet of a badger. It is somewhat less than the European polecat; *Pennant's synops. of quad. p.* 232.

Chinche; *Seuillée, Obs. Peru, p.* 272.

Skunk, fiskatta; *Kalm's voy. Forster's trav. vol. 1. p.* 273. *tab. 2. Joffe's voy. p.* 85.

Enfant du diable, Bête puante; *Charlevoix, Nouv. France. tom. 5. p.* 196.

† This animal in shape is not unlike our common polecat, except that the nose of this is somewhat longer: The colour of all I have seen is black and white, though not always alike marked. This had a list of white, extending from the hind part of the head, along the ridge of the back, to the rump; with four others, two on each side, running parallel with it; *Gatesby's Nat. Hist. of Carolina, vol. 2. p.* 62.

The striated weasel, with rounded ears, head, neck, belly, legs, and tail, black; the back and sides marked with five parallel white lines, one on the top of the back, the others on each side. The second line extends some way up the tail, which is long and bushy towards the end. It is of the size of

an

Briffon, under that of the *striped polecat*. We are acquainted with a fourth species, which we call *zorilla*, the name it receives in Peru and other parts of South America.

We are indebted for our knowledge of two of these animals to M. Aubry, whose taste and skill in natural history are conspicuous in his cabinet, which is one of the most curious in Paris. He obligingly communicated to us all his treasures, as often as we required them; and this will not be the only opportunity we shall have of expressing our gratitude. The animals we borrowed from Mr Aubry, in order to have them drawn and engraved, are the coase, the chinche, and the zorilla; the two last of which may be regarded as new; because there is no figure of them to be found in any author.

The

an European polecat; only the back is more arched. The disposition of the stripes varies; *Pennant's Synops. of quad. p. 232.*

Polecat or skunk; *Lawson's Carolina; Catesby's Carolina.*

Mustela Americana foetida; Klein. quad. p. 64.

Viverra putorius, fusca, lineis quatuor dorsalibus, parallelis, albis; Linn. syst. nat. p. 64.

* The zorilla weasel has the back and sides marked with stripes of black and white; the last tinged with yellow. The tail is long and bushy, part white and part black. The legs and belly are black. It is smaller than the skunk; *Pennant's Synops. of quad. p. 233.*

Mustela nigra, tæniis in dorso albis, putorius striatus. Le Putois rayé; Briffon. quad. p. 181.

Annas of the Indians; Zorrinas of the Spaniards; Garcilasso de la Vega, p. 331.

Mariputa, Mafutiliqui; Gumilla, Orenoque, tom. 3. 240.

The first of these animals was transmitted to M. Aubry, under the name of *pekan*, devil's child, or wild cat of Virginia. I perceivell that it was not the *pekan*, rejected all the compound denominations, and discovered that it was the *Esquipati* of Hernandez, and the *Squash* of other travellers*: from which last appellation I derived the name *coase*. It is about sixteen inches long, including the head and body. The legs are short, the muzzle thin, and the ears small. The hair is of a deep brown colour, and the claws are black and sharp. It lives in the holes and clefts of rocks, where the female brings forth her young. It feeds upon beetles, worms, and small birds; and, when it gets admision to the court-yards, it destroys the poultry, of which it only eats the brain. When afraid or irritated, it emits an odour so abominable, that neither men nor dogs dare approach. Its urine, which, apparently mingles with this pestiferous odour, stains and infects in an indelible manner. It appears, however, that this disagreeable odour is not constant: 'This animal,' Seba remarks, 'was sent me alive from Surinam; and I kept it during a whole summer in my garden, where it was secured by a small chain. It never

* *Esquipati*, whose colour resembles that of burnt maize. — Its head resembles that of a young fox; and its snout is nearly like that of a hog. The Americans call it *quasje*; Seba, vol. 1. p. 68. Note. This authority is a farther proof that *squash* or *coase*, is the true name of the animal.

' ver bit any person; and when it was presented
 ' with food, it allowed itself to be handled like a
 ' small dog. It dug the earth with its snout and
 ' fore feet, which were armed with long crooked
 ' claws. During the day, it concealed itself in a
 ' kind of den which it had made. It came out
 ' in the night, and, after trimming itself, it be-
 ' gan to run about, from right to left, as far as
 ' its chain would permit; and this exercise it
 ' continued till morning. It searched every
 ' where with its nose on the ground. It was
 ' served with victuals every night, and never took
 ' any food but what was agreeable to its nature.
 ' It was not fond of flesh, bread, and several o-
 ' ther kinds of nourishment. Maybugs, boiled
 ' shrimps, caterpillars, and spiders, were its chief
 ' delicacies. About the end of autumn, it was
 ' found dead in its hole, being unable to endure
 ' the cold. The hair on the back is of a deep
 ' chesnut colour; the ears are short; the fore-
 ' head is round, and of a brighter colour than
 ' the back; and the belly is yellow. The tail is
 ' of a moderate length, covered with short brown
 ' hair, and a kind of yellowish rings were per-
 ' ceptible all round it.

Though Seba's description and figure corre-
 spond very well with those of Hernandez, it may
 be doubted whether they relate to the same a-
 nimal; because Seba makes no mention of the
 detestible odour, which he must unquestionably
 have perceived in the course of a whole summer,
 during

during which he kept the animal in his garden. But no such doubt will remain, after we are informed, that this animal does not send forth its disagreeable odour, unless when irritated or frightened; and that it is often tamed and kept in houses by the inhabitants of different parts of America*.

Of these four species of *mouffettes*, to which we have given the name of *coase*, *conepate*, *chinché*, and *zorilla*, the two last belong to the warmest climates of South America, and may be varieties only, and not distinct species. The two first inhabit the more temperate climates of New Spain, Louisiana, the Illionois, Carolina, &c. and appear to be different species, particularly the *coase*, which has only four toes on the fore feet, while all the others have five. But all these animals have the same figure, the same instincts, the same pestiferous odour, and may be said to differ only in the length and colour of their

* Notwithstanding the offensive quality of those animals, they are sometimes tamed by the English, French, Swedes, and Savages of North America. They are said to follow their masters like domestic animals, and that they do not throw out their urine, unless when beat or irritated. When a Savage kills any of them, he cuts out the bladder, to prevent their flesh, which is good eating, from being infected with the smell of the urine. I often met with English and French, who informed me, that they had eaten this flesh, and found it to be very well tasted, approaching nearly to the flavour of a pig. The Europeans put no value on the skin, on account of the length and coarseness of the hair; but the Savages make purses of it, &c.; *Kalm's travels*, p. 417.

their hair. The coat is of a pretty uniform brown colour. The conepate *, upon a black ground-colour, has five white bands which extend

* The English denominate *poscat*, a species of animal which is common not only in Pennsylvania, but in several other more northern and southern provinces of America. In New-York, its vulgar name is *Skunk*; and the Swedes in that country call it *Fishtar*. . . . This animal has a great resemblance to the martin, and is generally of a black colour, with three white bands which run longitudinally from head to tail. Some of them have been seen, though rarely, almost entirely white. . . . This animal brings forth its young in burrows, or in hollow trees: It continues not always on the ground, but mounts upon trees. It is an enemy to birds; for it breaks their eggs and eats their young. When it gets admission to a hen-house, it makes great havock. . . . When hunted, either by men or dogs, he runs as well as he can, or climbs up a tree; and, when hard pushed, he darts forth his urine against his pursuers. . . . The odour of his urine is so strong, that it suffocates. If a drop of this pestiferous fluid falls upon the eyes, the person is in danger of losing his sight; and, when it falls upon a man's clothes, it is extremely difficult to extract the smell from them. Most dogs fly from him the moment they perceive this odour. It requires more than a month to remove the smell from stuffs of any kind. . . . In the woods, it is often felt at a great distance. In the year 1749, one of these animals came near the place where I lodged. It was in winter and during the night. The dogs were awakened, and pursued it. In a moment, it diffused an odour so fetid, that I was almost suffocated in my bed, and the cows bellowed in a hideous manner. . . . About the end of the same year, another of them slipped into our cave; but it diffused not the smallest odour, which it never does, unless when pursued or irritated. A woman perceived its eyes sparkling in the dark, and killed it. The cave was instantly filled with such a noxious odour, that the woman was not only sick for several days, but the bread, meat, and other provisions were so infected, that they were obliged to be thrown away; *Kalm's travels*, p. 412.

tend longitudinally from the head to the tail. The chinche * is white on the back, and black on the flanks, with a head entirely black, except a white line which extends from the nap of the neck to the chanfrein of the nose. Its tail is bushy, and covered with very long white hair, mixed

* This animal was called *chinche* by the natives of Brasil. It is of the size of a cat. Its head is long, and tapers toward the end of the upper jaw, which advances beyond the under, and both form a mouth which extends to the external angles of the eyes. The eyes are long and narrow: The uvea is black, and all the rest white. The ears are large, and nearly resemble those of a man, and their whole structure indicates a delicate sense of hearing. Two white bands arise on the head, pass over the ears, and, receding from each other, terminate in an arch upon the sides of the belly. Its legs are short, and the paws are divided into five toes, armed with black claws, with which it digs holes in the earth. Its back is arched like that of a hog, and its belly is flat. The tail is of equal length with the body, and differs not from that of the fox. The hair is of a dark gray colour, and as long as that of a cat. It burrows in the earth like a rabbit; but its hole is not so deep. I have had much difficulty in extracting the bad smell of this animal from my clothes which had been infected by it. Though several times washed, soaked, and dried in the sun, it continued more than eight days. I was informed that this smell proceeds from the animal's urine, which it discharges on its tail, and by this means disperses it all around, in order to put the enemy to flight by the intolerable stench; that, for the same purpose, it urines in the entry to its habitation; that it is very fond of small birds and poultry; and that it is the chief cause of the destruction of birds in the country of Buenos-aires; *Journal du P. Lemille, p. 272. — Note.* The chinche appears to be the same animal with the *chinille* mentioned by Acosta. 'The chincilles,' he remarks, 'are small animals like squirrels, and their hair is wonderfully soft and smooth. . . . They are found in the Sierre of Peru;' *Hist. Nat. des Indes Occident. p. 199.*

mixed with a little black. The zorilla*, which is also called *mapurita*†, seems to be a smaller species. Its tail, however, is as bushy and as beautiful as that of the chinche, from which it differs in the disposition of the spots of the fur. The ground-colour of the zorilla is black, upon which there are longitudinal white bands, extending from the head to the middle of the back, and other transverse white bands on the flanks, the crupper, and the origin of the tail, which is black as far as the middle, and then white to the extremity; but the tail of the chinche is of one uniform colour. All these animals ‡ are nearly of

* The zorilla of New Spain is as large as a cat, with black and white hair, and a very fine tail. When pursued, it discharges its urine as a defence; for the stench of this excretion is so strong, that it poisons the air all round to the distance of a hundred paces, and prevents the enemy from advancing. If it falls upon clothes, they must be buried for some time under the ground, in order to remove the stench; *Voyage de Gemelli Careri, tom. 6. p. 212.*

† The mapurita is a small animal on the banks of the Oronoko, and is perhaps the most beautiful, and, at the same time, the most detestible creature. The Whites of America call it *mapurita*, and the Indians *masutiqui*. Its body is all spotted with black and white, and its tail is adorned with beautiful hair. It is an active, mischievous, and strong animal. . . . The stench of its odour, which extends to a great distance, is so intolerable, that I was once almost suffocated by it. . . . The Indians, however, eat its flesh, and adorn themselves with its skin, which has no bad smell; *Hist. Nat. de l'Orenoque, par Gumilla, tom. 3. p. 240.*

‡ In Louisiana, there is a small animal of considerable beauty, but whose urine poisons the air to the distance of more than a league; for this reason, it is called the *stinking beast*.

of the same figure, and of the size of an European polecat, which they resemble still more in their manners. The physical results of their organization are likewise the same. Of all the animals on this Continent, the polecat diffuses the most

VOL. VII.

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disagreeable

beast. It is as large as a cat. The male is of a fine black colour; the female is likewise black, and spotted with white. Its eyes are extremely vivacious. . . . It is justly denominated *stinking*; for its odour is infectious. . . . I once killed one of these animals, and my dog having darted upon it, returned and fanned upon me. A drop of the blood, and doubtless also of the urine, was left upon my coat, which was made of hunting ticking. The smell was so intollerable, that I was obliged to run home to change my clothes, &c. *Hist. de la Louisiane, par le Page du Pratz, tom. 2. p. 86.*

When one of these animals is attacked by a dog, to appear formidable, it so changes its usual form, by bristling up its hairs, and contracting its length into a round form, that it makes a very terrible appearance. This menacing behaviour, however insufficient to deter its enemy, is seconded by a repulse far more prevailing; for, from some secret duct, it emits such fetid effluvioms, that the atmosphere, for a large space round, shall be so infected with them, that men and other animals are impatient till they are quit of it. This stench is insupportable to some dogs, and necessitates them to let their game escape; others, by thrusting their noses into the earth, renew their attacks till they have killed it, but rarely care to have more to do with such noisome game, which, for four or five hours, distracts them. The Indians, notwithstanding, esteem their flesh a dainty, of which I have eat, and found it well tasted. I have known them brought up young, made domestic, and prove tame and very active, without exercising that faculty, which fear and self-preservation, perhaps, only prompt them to. They hide themselves in hollow trees and rocks, and are found in most of the northern continent of America. Their food is insects and wild fruit; *Catesby's Carolina, vol. 2. p. 62.*

disagreeable odour. This odour is only more exalted in the mouffettes, whose species or varieties are numerous in America. But, in the Old Continent, the species of the polecat is single; for I believe not that the animal mentioned by Kolbe, under the name of the *sinking badger* *, which appears to be a real mouffette, exists at the Cape of Good Hope as a native of that country. It may have been transported from America; and Kolbe, who is by no means exact in his facts, may have borrowed his description from P. Zuchel, whom he quotes as having seen this animal in Brasil. That of New Spain, called *Ortobua* by Fernandez †, seems to be the same animal with the zorilla of Peru; and the *tepemaxtla* of the same author may be the coneate, which ought to be found in New Spain, as well as in Louisiana and Carolina.

The

* Descript. du cap de Bonne-Esperance, par Kolbe, tom. 3. p. 86.

† *Ortobula*; magnitudine tres dodrantes vix superat, nigro candidoque vestita pilo, sed quibusdam in partibus fulvo apud has gentes in eibi jamdiu venit usum, quamvis crepitus ventris sit illi foetidissimus: Occitucensibus versatur agris . . . est et altera species quam tepemaxtlam vocant, eadem fere forma et natura, sed nulla in parte fulva, et cauda nigris albisque fasciis transversim discurrentibus varia, quae provenit quoque apud Occitucenses; *Fernand. Hist. An. Nov. Hisp. p. 6. cap. 16.*



A. Bell Sculpt.

COASSE.

Plate CCXLII.



CHINCH.

PLATE CXXIII.



A. Hall's sculp.

CONEPATE.

Plate CXXIV.



ZORILLE.

The PEKAN* and the VISON.

THE name *Pekan* was long familiar in the fur-trade of Canada †, without knowing the animal to which it properly belonged. This name is not to be found in the writings of the naturalists, and travellers have employed it indiscriminately to denote different animals ‡, and particularly the mouffettes. By others, the animal which ought to bear the name of pekan has been called a *fox* or a *wild cat*; and it was impossible to derive any precise knowledge from such short and erroneous intimations. With regard to the *vison*, we are equally ignorant. We know nothing of those names, except that they belong to two North American animals. We found

* Pekan Weasel, with very long and strong whiskers; ears a little pointed; hair on the head, body, belly, and legs, cinereous at the roots, and of a bright bay at the ends, very soft and glossy. Between the fore-legs, there is a white spot. The toes are covered with thick hair above and below. The claws are sharp. The tail is of a deeper colour than the body. In form, it is like a martin, but much less; *Pennant's Synops. of quad. p. 224.*

† Names of the skins brought from Canada, and their values in the year 1683.——Those of the pekan, wild cats, or devil's children, are worth one livre fifteen sous a piece; *Voyage de la Honan, tom. 2. p. 39.*

‡ It diffuses an insupportable odour. In Canada, the French call it *devil's child*, or *stinking beast*: Some of them, however, give it the name of *pekan*; *Kalm's trav. p. 412.*

found these two animals in the cabinet of M. Aubry, who obligingly permitted us to describe and draw them.

The pekan has so strong a resemblance to the pine weasel, and the vison * to the martin, that they may be regarded as varieties of these species. They not only have the same figure, the same proportions, the same length of tail, the same quality of hair, but the same number of teeth and claws, and the same instinct and manners. Hence we may conclude, that the pekan is a variety of the pine weasel, and the vison a variety of the martin, or, at least, that the species are so allied, that they exhibit no real difference. The hair of the pekan and vison is only browner, more lustrous and silky than that of the pine weasel and the martin. But this difference, it is well known, is common to them with the beaver, the otter, and other animals of North America, whose furs are more beautiful than those of the same animals in the North of Europe.

THE

* I am inclined to think, that the animal mentioned by Sagard Theodat, under the name of *Ottay*, is the same with the vison: 'The ottay,' he remarks, 'is as large as a small rabbit. Its hair is very black, and so soft, polished, and fine, that it resembles velvet.' The Canadians are fond of these skins, and make garments of them; *Voyage au pays des Hurons*, p. 308. No Canadian animal corresponds so well with this description as the vison.

Plate CCXLV.



PECAN.

Plate CCLVL



VISON.

THE



1867

THE SABLE*.

THE Sable is mentioned by almost every naturalist, without knowing more of it than the skin. M. Gmelin is the first who gave a figure and description of this animal. He saw two of them alive in the house of the governor of Tobolski. 'The sable,' says he, 'resembles the martin in the form and habit of body,

* Sable weasel, with long whiskers, rounded ears, and long bushy tail. The colour of the hair is black at the tips, and cinereous at the bottom; the chin is cinereous, and the edges of the ears yellowish. Sometimes the hair is of a tawny cast; for, in spring, after shedding the coat, the colour varies. There are instances of their being found of a snowy whiteness. The usual length, from nose to tail, is about eighteen inches, and that of the tail ten; *Pennant's synopsis of quad. p. 217.*

Zobel, in German; *Sobol*, in Polish; *Sabbel*, in Swedish; *Zibeline*, *Marte Zibeline*, in French.

Zobela; *Agricol. An. subter. p. 485.*

Mustela sobella; *Gesner. quad. p. 768.*

Mustela Zibellina, the sable; *Raii syn. quad. p. 201. Klein. quad. p. 64.*

Mustela Zibellina, *Aristotelis Satherius*, *Nipho*, *Cebalus*, *Alciato*, *Mus Sarmaticus et Scythicus*; *Charleton exercit. p. 20.*

Mustela Zibellina, pedibus fissis, corpore obscure fulvo, fronte exalbida, gutture cinereo; *Linn. syst. nat. p. 68.*

Mustela Zibellina; *Nov. Com. Petrop. tom. 5. p. 330. tab. 6.*

Martes Zibellina; *Mustela obscure fulva*, gutture cinereo; *Briffon. quad. p. 180. Animalium quorundam quadrup. descript. auctore Georg. Gmelin.*

body, and the weasel in the teeth. It has six cutting teeth pretty long and a little crooked, and two canine, in the under jaw, and small sharp teeth in the upper. It has long whiskers round the mouth, and large feet, all armed with five claws. These characters were common to both the fables. But the one was of a blackish brown colour all over the body, except the ears, and below the chin, where the hair was a little yellow. The other was smaller, and of a yellowish brown colour, with the ears and under part of the chin of a paler cast. These are their winter colours; for, in spring, they change by the shading of the hair. The first sable, which was of a blackish brown, changes into a brownish yellow in spring; and the second, which was of a yellowish brown, becomes a pale yellow. I admired, continues M. Gmelin, the agility of these animals. Whenever they perceive a cat, they rise upon their hind feet, to prepare for the combat. In the night, they are extremely restless and active*. During the day, on the contrary, and particularly after eating, they generally sleep half an hour or an hour, when they may be pushed, shaken, and even pricked, without awaking. From this description we learn, that the fables are not all of the

* This restless activity during the night is not peculiar to the sable. The same thing I remarked in two ermines, which I kept for several months.

the same colour; and, consequently, that the nomenclators, who describe them by the spots and colours of the hair, have employed a fallacious character; for their colour not only varies in different seasons, but the individuals of the same and of different climates differ from each other.

The fables inhabit the banks of rivers, and the thickest parts of the woods. They leap with great agility from tree to tree, and avoid the rays of the sun, which are said, in a short time, to change the colour of their hair. It is pretended, that they conceal themselves, and lie in a torpid state during the winter*; and yet this is the best season for hunting them, because their fur is then better and more beautiful than in summer. They live upon rats, fishes, pine tops, and wild fruits. They are very ardent in their amours: During their season of love, they emit a strong odour, and their excrements, at all times, have a disagreeable smell. They are chiefly found in Siberia: There are not many

* Of the two fables mentioned by M. Gmelin, the first came from the province of Tomskien, and the second from that of Beresowien. We likewise learn, from his account of Siberia, that there are on the mountains of Sopka-Sinaia, black fables with short hair, the hunting of which is prohibited; and that a similar kind is also found in the more advanced mountains, as well as among the Calmucks Vrangai. I saw, says he, some of their skins which the Calmucks had brought down: They are distinguished by the name of *Kangaraga fables*; *Voyage de Gmelin, tom. 1. p. 217.*

many of them in the forests of Great Russia, and still fewer in Lapland. The blackest sables are most esteemed *. The sable differs from all other furs in this circumstance, that the hair turns with equal ease to any side.

The hunting of the sables is carried on by criminals confined to Siberia, or by soldiers sent for the purpose, who generally remain there several years. Both are obliged to furnish a certain quantity of furs. They shoot with a single ball, to injure the skin as little as possible; and sometimes, instead of fire-arms, they use cross-bows and small arrows. As the success of this hunting requires much address and assiduity, the officers are allowed to encourage the soldiers, by giving them a proportional part of all the sables they kill above what they are obliged to furnish weekly, which turns out to be a considerable premium †.

Some

* The sable differs from the martin by being smaller, and having finer and longer hair. The true sables are damasked with black, and are taken in Tartary. There are few of them in Lapland. The fur is esteemed in proportion to the blackness of the hair, and sometimes sells at sixty crowns, though the width of the skin exceeds not four inches. Some of them have been seen white, and others gray; *Regnard, tom. 1. p. 176.* Scheffer likewise remarks, that white sables are sometimes found; *Hist. de la Lapponie, p. 318.*

† A colonel, from seven years service in hunting sables, may draw, of clear profit, four thousand crowns, the subalterns in proportion, and each soldier six or seven hundred; *Voyage du P. Avril, p. 169.* See also *Relat. de la Moscovie, par la Neuville, p. 217.*

Some naturalists have suspected that the sable is the *satherius* of Aristotle; and I believe their conjecture is well founded. The fineness of the fur is a proof that the animals are often in water; and travellers inform us †, that they are never very numerous, but in small islands, where the hunters go in quest of them. Besides, Aristotle mentions the *satherius* as a water animal, and ranks it with the otter and beaver. It is likewise to be presumed, that, when Athens was in its splendor, these beautiful furs were known in Greece, and that the animal which furnished them had a name. Now, there is no name which can more properly be applied to the sable, than that of *satherius*, especially if it be true that the sable eats fish ‡, and continues so much in the water as to be reckoned amphibious.

S U P P L E M E N T.

To the article sable we have nothing to add, but some facts, related by the Russian travellers, which are published in the last volumes of the *Hist. Gen. des voyages*.

VOL. VII

R r

The

† The hunters go to the small islands in quest of sables, where they retire. They are killed with a kind of cross-bows, &c.; *Voyage du P. Avril*, p. 168.

‡ In umbrosis saltibus versatur semper, insidiatur aviculis.—
In escam assumit mures, pisces, uvas rubeas; *Rzacinski, auct. hist. nat. Polon.* p. 318.

‘ The sables live in holes of corrupted trees,
‘ or under their roots, or on rocky eminences.
‘ Their nests are constructed with moss, branches
‘ of trees, and turf. In these holes or nests,
‘ they continue twelve hours, both in summer
‘ and winter. The remainder of their time
‘ is occupied in quest of subsistence. In spring,
‘ they feed upon weasels, ermines, squirrels,
‘ and especially hares. But, in the fruit sea-
‘ son, they eat bay-berries, and the fruit of the
‘ service-tree. In winter, they catch small birds
‘ and woodcocks. When the snow falls, they
‘ retire to their holes, where they remain some-
‘ times three weeks. They copulate in the
‘ month of January. Their amours continue
‘ one month, and often produce bloody combats
‘ between the males. After copulation, they
‘ remain in their nests about fifteen days. The
‘ females bring forth about the end of March,
‘ and produce from three to five young, whom
‘ they suckle four or six months.

‘ The hunters go, in companies of forty, in
‘ quest of these animals during the winter only,
‘ and use canoes, with provisions for three or
‘ four months. They have a chief, who, when
‘ they arrive at the rendezvous, assigns to each
‘ band a particular quarter, and all the hunters
‘ are obliged to obey him. The snow is re-
‘ moved from the places where the snares are
‘ to be laid; and each hunter prepares twenty
‘ of them daily. The hunters choose a small
‘ spot in the vicinity of trees, surround it, to a
‘ certain

* certain height, with sharp stakes, and cover
‘ it with thin planks, to prevent the entrance of
‘ the snow. They leave a narrow passage, above
‘ which is placed a beam, supported only by a
‘ small twig; and, as soon as the sable touches
‘ it, to carry off the piece of flesh or fish, put
‘ there for a bait, the beam falls and kills the
‘ animal. All the sables are brought to the
‘ general conductor; or, rather, they are con-
‘ cealed in the holes of trees, to prevent the
‘ Tongusians, or other savage people, from
‘ stealing them. When the sables are averse
‘ to enter these snares, the hunters have re-
‘ course to nets. When a hunter discovers
‘ the track of a sable, he follows it till he dis-
‘ covers its hole, and, by means of smoke, o-
‘ bliges the animal to come out. He then
‘ extends his net; and continues lying in wait,
‘ in this manner, with his dogs, for two or
‘ three days successively. This net is thirteen
‘ fathoms long, and four or five in height.
‘ When the sable leaves its hole, it seldom
‘ escapes; for the dogs slay it when entangled
‘ by the net. When discovered on the trees,
‘ the hunter shoots them with blunt arrows.
‘ to prevent the skins from being injured. The
‘ hunting being finished, the company assemble
‘ at the general rendezvous, and reembark as
‘ soon as the rivers become navigable by the
‘ melting of the ice*.’

The

* Hist. Gen. des Voyages, tom. 19. p. 144.

The LEMING, or LAPLAND MARMOT*.

OLAUS MAGNUS is the first who mentions the leming. All that Gefner, Scalliger, Ziegler, Johnston, &c. have said concerning it, is borrowed from this author. But Wormius, after the most accurate researches, has

* Lapland marmot, with two very long cutting teeth in each jaw; head pointed; long whiskers; six of the hairs on each side longer and stronger than the rest; eyes small and black; mouth small; upper lip divided; ears small, blunt, and reclining backwards; fore legs very short; four slender toes on the fore feet, covered with hairs; and, in the place of the thumb, a sharp claw, like a cock's spur; five toes behind; tail about half an inch long, the body and head about five. The skin is very thin. The colour of the head and body is black and tawny, disposed in irregular blotches. The belly is white, tinged with yellow; *Pennant's synopsis of quadrupeds*. p. 274.

Leming is the Norwegian name of this animal, which we have adopted.

Lemmar vel lemmus; Olai Magni, de gent. septentrionalibus. p. 358.

Leem vel lemmer; Gefner, quadrupeds. p. 371.

Mus Norwegicus, vulgo Leming; Wormius, Mus. p. 321. 325. Schoeffer. Lapland, p. 136. Pontopidan. Norway. Stram. Sandmor, p. 154. Raii Synopsis quadrupedum. p. 227.

Sable miee; Phil. Trans. abridg. vol. 2. p. 875.

Cuniculus caudatus, auritus, ex flavo, rufo, et nigro variegatus; Brisson. quadrupeds. p. 100.

Mus lemmus, cauda abbreviata, pedibus pentadactylis, corpore fulvo nigro vario; Linn. System. naturae. p. 80.

Fial-mus, fabell-mus. Lappis Lummick; Fauna Suecica. No. 29.

has written a history of this animal, which he describes in the following manner: 'It has,' he remarks, 'the figure of a mouse; but the tail is shorter, and the body about five inches long. The hair is fine, and spotted with various colours. The fore part of the head is black, and the hind part yellowish. The neck and shoulders are black. The rest of the body is reddish, and marked with small black spots of different figures, as far as the tail, which exceeds not half an inch in length, and is covered with blackish yellow hairs. Neither the figure, nor the order of the spots, are the same in every individual. Round the mouth there are several stiff hairs in the form of whiskers, of which six on each side are longer and stiffer than the rest. The opening of the mouth is small, and the upper lip is divided, as in the squirrels. From the upper jaw proceed two long, sharp, and somewhat crooked cutting teeth, the roots of which penetrate as far as the orbits of the eyes. Two similar teeth in the under jaw correspond with those above; and there are three grinders on each side, situated at a distance from the cutting teeth. The first of the grinders is large, and composed of four lobes, the second of three lobes, and the third is much smaller. Each of these three teeth has a separate socket, and they are placed in the palate, at a considerable distance from one another. The tongue is pretty large, and extends

' tends to the extremity of the cutting teeth.
 ' From the remains of herbs and straw found
 ' in its throat, we are inclined to think that it
 ' is a ruminating animal. The eyes are small
 ' and black, and the ears recline on the back.
 ' The forelegs are very short, and the feet covered
 ' with hair, and armed with five sharp, crooked
 ' claws; the middle one is very long, and the
 ' fifth is like a small thumb, or a cock's spur,
 ' and sometimes situated equally high on the
 ' leg. The whole belly is whitish, inclined to
 ' yellow,' &c.

These animals, though their body is thick,
 and their legs very short, fail not to run pretty
 quickly. They generally inhabit the mountains
 of Norway and Lapland; but, in particular
 years, they sometimes descend in such numbers *,
 that

• It has been remarked, that the lemmings appear not re-
 gularly every year, but at certain unforeseen periods, and in
 such numbers, that they spread every where, and cover the
 whole surface of the earth. . . . These small animals, instead
 of being afraid, or flying from passengers, are bold and ob-
 stinate, face those who attack them, and cry and yelp nearly
 in the same manner as small dogs. When attacked, they
 neither fear clubs nor halberds, but dart against those who
 strike them, outrageously biting, and fixing upon the weapons
 employed to kill them. These animals, it is singular, never
 enter the houses or huts to do mischief; but keep always con-
 cealed among the bushes and hillocks. They sometimes make
 war, and divide themselves into two armies along the lakes
 and meadows. . . . Their enemies are foxes and ermines,
 who devour great numbers of them. . . . Grass that has
 been eat down, and springs again, is said to kill them; and
 they

that the arrival of the lemmings is considered as a terrible scourge, the effects of which it is impossible to avoid. They make dreadful devastation in the fields, lay waste the gardens, ruin the crops, and leave nothing, except what is shut up in houses, where they happily never enter. They bark nearly like small dogs. When struck at with a stick, they seize it so forcibly with their teeth, that they allow themselves to be carried to a considerable distance without quitting their hold. They dig holes in the earth, and make roads, like the moles, in quest of roots. At particular times, they assemble together, and the whole die in company. They are very courageous, and defend themselves against other animals. It is not known from whence they come. The vulgar believe that they fall from the clouds along with the rain *.

The

they seem likewise to commit suicide; for they are often found suspended on the branches of trees; and they probably throw themselves, in troops, into the waters, like the swallows; *Hist. de la Laponie, par Schoeffer, p. 322. Note.* It would appear that the lemmings, like the rats, mutually destroy and eat one another, when pasture fails them; and that this is the reason why their destruction is as sudden as their multiplication.

* *Bestiolae quadrupedes, lemmar vel lemmus dictae, magnitudine foricis, pelle varia per tempestates et repentinos imbres—incompertum unde, an ex remotioribus insulis et vento delatae, an ex nubibus foeculentis natae deferantur. Id tamen compertum est, statim atque deciderint, reperiri in visceribus herbae crudae nondum incoctae. Hae more locustarum in maximo examine cadentes omnia virentia destruunt, et quae*
morsu

The male is generally larger than the female, and his black spots are also larger. Upon the renewal of the grass, they infallibly die. In fine weather they take to the water in vast multitudes; but, when a breeze of wind rises, they are all drowned. The number of these animals is so prodigious, that, when they die, the air is infected, and produces many diseases. They even seem to infect the plants which they gnaw; for the pasture then kills the cattle. The flesh of the leming is not good to eat; and their skin, though the hair be fine, does not answer for making furs, because it is too thick.

The

morsu tantum attigerint emoriuntur virulentia; vivit hoc agmen donec non gustaverit herbam renatam. Conveniunt quoque gregatim quasi hirundines evoluturae, sed stato tempore aut moriuntur acervatim cum lue terrae, (ex quarum corruptione aer fit pestilens, et afficit incolae vertigine et letore), aut his bestiis dictis vulgariter *lekat*, vel *hermelin*, consumuntur, unde iidem hermelini pinguescunt; *Ol. Mag. hist. Gent. sept. pag. 142.*

The SEA OTTER*.

THE *Saricovienne*, (or sea otter), says Thetvet, 'is found along the river Plata. It is of an amphibious nature, living more in
Vol. VII. Ss the

* Sea otter, with a black nose; upper jaw longer and broader than the lower; long white whiskers; irides hazel; ears small, erect, and conic. In each jaw there are four cutting teeth. The grinders are broad, adapted for breaking and comminuting crustaceous animals and shell fish. The skin is thick. The hair is long, thick, and excessively black and glossy, beneath which is a soft down. The colour sometimes varies to silvery. The legs are thick and short. The toes are covered with hair, and joined by a web. The hind feet are exactly like those of a seal, and have a membrane skirting the outside of the exterior toe, like that of a goose. The length, from nose to tail, is four feet two inches. The tail is thirteen inches long, flat, fullest in the middle, and sharp pointed. The biggest of these animals weigh seventy or eighty pounds; *Pennant's synops. of quad.* p. 241.

Ilya, quae et *carigueibeju* appellatur a Brasiliensibus; *Marcegr. Hist. Nat. Brasil.* p. 234.

Lutra nigricans, cauda depressa et glabra; *Barrere, hist. de la Franc. equin.* p. 155.

Lutra Brasiliensis; *Raii Synops. quad.* p. 189.

Lontre ou *carigueibeju*; *Des Marchais, tom.* 3. p. 306.

Guachi; *Gumilla Orenoque, tom.* 3. p. 239.

Le *Saricovienne*; *Buffon.*

Mustela lutris, plantis palmatis pilosis, cauda corpore quadruplo brevior; *Linn. Syst. Nat.* p. 66.

Lutra atrii coloris, macula sub gutture flava; *Briffon, quad.* p. 202.

Lutra marina, *Kalm.; Nov. Com. Petrop. tom.* 2. p. 367. tab. 16.

Sea Otter; *Hist. of Kamtschatka*, p. 122. *Muller's Voy.* p. 57.

‘ the water than upon land. This animal is as
 ‘ large as a cat; and its skin, which is a mix-
 ‘ ture of gray and black, is as fine as velvet.
 ‘ Its feet resemble those of water-fowl; and its
 ‘ flesh is extremely good and delicate *.’ I be-
 gin with the above passage, because the animal
 is unknown to the naturalists under this name,
 and because they know not that the *carigucibeju*
 of Brasil, which is the same, has membranes
 between the toes. Marcgrave, indeed, who
 gives a description of it, mentions not this cha-
 racter, which is an essential one, since it brings
 this species as near as possible to that of the
 otter.

Besides, I believe that the animal mentioned
 by Gumilla, under the name of *Guachi* †, may
 be

* Singularités de la France antarctique, par Thevet, p. 107.

† On the rivers which fall into the Oronoko, there are
 a great many water dogs, which the Indians call *Guachi*.
 This animal swims swiftly, and feeds upon fishes. It is am-
 phibious; but goes likewise in quest of food upon the land.
 It digs ditches on the banks, where the female brings forth
 her young. These ditches are not made in retired places,
 but where the animals live in common, and come to amuse
 themselves. I carefully examined their habitations, and
 found them to be always exceedingly clean. They leave not
 the smallest herb in the neighbourhood. They heap up, at
 a distance, the fragments of the fishes they eat, and, by leap-
 ing, going, and returning, they make their roads extremely
 neat and commodious; *Hist. de l’Orénoque, par Gumilla, tom. 3,*
p. 29. Nota. These characters correspond with the *farico-*
vienne; but the name *guachi* seems to be here improperly ap-
 plied, because it probably belongs to a species of moustelle,
 which we have called the *coase*.

be the same with the *faricovienne*, which is a species of otter common throughout all South America. From the description given of it by Marcgrave and Desmarchais *, it appears, that this amphibious animal is as large as a middle sized dog; that the top of its head is round like that of the cat; that its muzzle is somewhat long, like that of the dog; that it has the teeth and whiskers of a cat; small, round, black eyes; ears roundish, and placed low; five toes on each foot, with the thumbs shorter than the other toes, which are all armed with sharp brown claws. The tail is as long as the hind legs. The hair is pretty short and very soft. It is black on the body, and brown on the head, with a white spot under the chin. Its cry is nearly like that of a young dog; and it is sometimes interrupted by another cry similar to that of the *fagoin*, or fox-tailed monkey. It feeds upon crabs and fishes; but it may likewise be nourished with the flour of manioc diluted in water. Its skin makes a good fur; and, though it lives chiefly on fishes, its flesh is very good, wholesome, and has no bad flavour.

The

* Voyage de Desmarchais, tom. 3. p. 306.

THE SEA OTTER.

The CANADIAN OTTER.

THIS otter, which is much larger than ours, and ought to be found in the north of Europe, as well as in Canada, affords me an opportunity of inquiring whether it is the same animal with the *latax* of Aristotle, which, he remarks, is much larger and stronger than the common otter. But the ideas he gives of it correspond not entirely with this large otter; and, finding that it was perfectly similar to the common otter, except in size, I thought it was not a particular species, but a simple variety: And, as the Greeks, and especially Aristotle, were careful not to give different names but to distinct species, we are persuaded, that the *latax* is another animal. Besides, as the otters, like the beavers, are generally larger, and have finer and blacker hair in America* than in Europe, this otter of Canada ought to be longer and blacker than the French otter. But, on considering what the *latax* of Aristotle might be, I conjectured that it was the animal mentioned by Belon,

* The otters of North America differ from those of France by being commonly longer and blacker. They are of different shades, and some of them are as black as jet; and those last are dearest and in greatest request; *Descript. de l'Amerique Septent. par Dennis, tom. 2. p. 280.*

lon, under the name of the *sea-wolf*. I shall, therefore, relate what Aristotle has said of the *latax*, and Belon of the *sea-wolf*, that the reader may have an opportunity of making the comparison.

In this passage, Aristotle mentions six amphibious animals; and, of these six, we know only three, the common seal, the beaver, and the otter. The other three, namely, the *latax*, the *satherion*, and the *satyrion*, remain unknown, because they are only pointed out by their names, without any description. In this case, as in all those where no direct induction can be derived from

• Sunt inter quadrupedes feraeque, quae victum ex lactu et fluvii petant; at vero a mari nullum, praeterquam vitulum marinus. Sunt etiam in hoc genere fiber, satherion, satyrion, lutris, *Latax* quae latior lutra est, dentesque habet robustos, quippe quae noctu plerumque egrediens, virgulta proxima suis dentibus ut ferro praecidat; lutris etiam hominem mordet, nec desistit, ut ferunt, nisi ossa fracti crepitum senserit. *Lataxi pilus durus, specie inter pilum vituli marini et cervi; Arist. hist. anim. lib. 8. cap. 5.* — The sea-wolf: As the English have no land wolves, Nature has furnished them with an animal that frequents the shores of their seas, which makes so near an approach to our wolf, that, if it did not prefer fishes to sheep, we would reckon it to be the very same, whether we consider its size, its hair, its head, (which, is always large), or its tail. But as this animal (he remarks) lives only on fishes, and was unknown to the antients, it seems to be no less singular than the double lived animals mentioned above; for which reason, I have given a figure of it; *Belon de la Nature des Poissons, p. 18. Nota.* The figure is on p. 19, and resembles the hyaena more than any other animal; but it could never be the hyaena; for he is not amphibious; neither does he live on fishes; and, besides, he belongs to a different climate.

from a knowledge of the object, we must have recourse to the mode of exclusion; but this mode can never be employed with success, except when we know nearly the whole subject. For example, from long study, I believe that I am acquainted with nearly the whole quadruped tribe. I know that Aristotle could have no information concerning those which are peculiar to the Continent of America. Of the quadrupeds, I likewise know all those which are amphibious: From these I, in the first place, strike off all those which belong to America, as the tapir, the cabiai, the ondatra, or musk-rat, &c. There remain only the amphibious animals of our own Continent, which are, the hippopotamus, the walrus or sea-cow, the seals or sea-calves, the sea-wolf of Belon, the beaver, the otter, the fable, the water-rat, the Muscovy musk-rat, the water shrew-mouse, and, if you choose, the ichneumon, which some authors have regarded as an amphibious animal, and called it the *Egyptian otter*. From this number, I retrench the walrus or sea-cow, which, being found only in the northern seas, was unknown to Aristotle. I likewise retrench the hippopotamus, the water-rat, and the ichneumon, because he mentions them elsewhere under their proper names. Lastly, I retrench the seals, the beaver, and the otter, which are well known, and the water shrew mouse, which is too similar to the land one to have ever received a separate name. There remain,

main, then, the sea-wolf of Belon, the fable, and the Muscovy musk-rat, for the *latax*, the *fatberion*, and the *satyrion*. Of these three animals, the sea-wolf of Belon alone is larger than the otter: Hence it alone can represent the *latax*; and, consequently, the fable and the Muscovy musk-rat must represent the *fatberion* and the *satyrion*. These conjectures, which I believe to be well founded, are not, however, of the number of those which time can elucidate, unless some Greek manuscripts, hitherto unknown, shall be discovered, where these names are employed, and new explications given of them.

The

main, then, the sea-wolf of Belon, the table, and the Minkovv and the Walrus, the Walrus.

The SEALS, the WALRUS, and the MANATI.

other: Hence it alone can represent the table, and consequently, the table and the Minkovv.

LET us assemble, for a moment, all the quadrupeds into one group, and let the intervals and ranks represent the proximity or distance between each species. Let us place in the centre the most numerous genera, and on the flanks those which are least numerous. Let us confine the whole within narrow bounds, that we may have the more distinct view of them; and we shall find, that it is impossible to round this inclosure. Though all quadrupeds are more closely connected together than to any other being; yet several of them make prominent points, and seem to fly off in order to join other classes of animated nature. The apes make a near approach to man. The bats are the apes of birds, which they imitate in their flight. The porcupines and hedge-hogs, by the quills with which they are covered, seem to indicate that feathers are not confined to birds. The armadillos, by their scaly shells, approach the turtle and the crustaceous animals. The beavers, by the scales on their tails, resemble the fishes. The ant-eaters, by their beak or trunk without teeth, and the length of their tongue, claim

Plate CCLVII.



CANADIAN OTTER.

THE [illegible]

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claim an affinity to the fishes. In fine, the seal, the walrus, and the manati, are a separate corps, and make a great projection, with a view to arrive at the cetaceous tribes.

Seal, Walrus, and Manati, are rather generic than specific denominations: Under the seal we shall comprehend, 1. The *phoca* of the ancients, which is probably that we have represented in the figure: 2. The common seal, or sea-calf. 3. The great seal, of which Mr Parsons has given a figure and description in the *Philosophical Transactions*, No. 469. 4. The very large seal, or *sea-lion*, described and painted by the author of Anson's voyage.

Under the name *Walrus*, we comprehend the animals commonly called *sea-cows*, or *sea-horses*, of which we know two species, the one found only in the northern, and the other in the southern seas; the last is called *dugon* or *Indian walrus*. In the last place, under the term *manati*, we comprehend the animals called *lamantins*, or *sea-oxen*, in St. Domingo, Cayenne, and other parts of South America, as well as the *lamantin* of Senegal, and other parts of the coast of Africa, which appears to be only a variety of the American kind.

The seal and walrus are more nearly allied to the quadrupeds than to the cetaceous animals; because they have a kind of four feet. But the manati, who have only two fore-feet resemble the cetaceous tribes more than the quadrupeds. Both

differ from other animals by a singular character: They alone can live equally in air and in water; and, consequently, they alone merit the appellation of *amphibious*. In man, and the other terrestrial viviparous animals, the *foramen ovale* of the heart, which permits the foetus to live without respiration, closes the moment after birth, and remains shut during life. In the seal and walrus, on the contrary, it is always open, though the mothers bring forth their young on land, and respiration commences immediately after birth, as in all other animals. By means of this perpetual aperture in the *septum* or partition of the heart, which allows a communication of the blood from the *vena cava* to the *aorta*, these animals enjoy the privilege of respiring, or not, at their pleasure. This singular power is common to the whole of them: But each possesses peculiar faculties, which shall be pointed out, as far as we have been able to learn, in the history of the particular species.

T H E S E A L S *

IN general, the seals, like man, have a round head; a broad muzzle, like the otter; large high

* In several European languages, these animals have received the denomination of *sea calves*, *sea dogs*, *sea wolves*, and *sea foxes*.

high placed eyes; small or no external ears, being only two auditory passages on each side of the head; whiskers round the mouth; teeth similar to those of the wolf; the tongue forked at the end; a fine neck; the body, hands, and feet, covered with short and pretty coarse hair; no apparent arms, but rather two membranes or skins, investing five fingers, and terminated by five claws; two feet without legs, and perfectly similar to the hands, only that they are larger, and turned backward to unite with a very short tail, which they accompany on each side; a long body, like that of a fish, but thick at the breast, narrow at the belly, without haunches, crupper, or thighs. The structure of this animal is so strange, that it served as a model, upon which the imagination of the poets framed the Tritons, Sirens, and Sea-gods, with a human head, the body of a quadruped, and the tail of a fish. The seal, in effect, reigns, in this mute empire, by his voice, his figure, his intelligence, and his talents, which are common to him with the inhabitants of the land, and render him so superior to the fishes, that they seem not only to belong to another order of beings, but to a different world. This amphibious animal, though his nature be very distant from that of our domestic animals, is susceptible of a species of education. He is reared by keeping him often in water; he is taught to give a salute with his head and his voice; he comes when called upon,

upon, and exhibits several other marks of intelligence and docility *.

His brain and cerebellum are proportionally larger than in man. His senses are as good as those of any quadruped; and, consequently, his sensations are equally vivacious, and his intellect equally active: Both are exhibited in the gentleness of his manners, his social dispositions, his affection for the female, his attention to his offspring, and in the expressive modulation of his voice, which is superior to that of any other animal †. He is also endowed with strength and weapons of defence. His body is large and firm, and his teeth and claws are sharp. Besides, he enjoys advantages which are peculiar to him. He is neither afraid of cold nor of heat. He lives indifferently on herbs, flesh, or fish. He inhabits, without inconvenience, water, land, and ice. He, along with the walrus, alone deserves the epithet of *amphibious*. He alone has the *foramen ovale* of the heart open ‡; and,

* Vituli marini accipiunt disciplinam, voceque pariter et visu populum salutant: Incondito fremitu nomine vocati respondent; *Plin. hist. nat. lib. 9. cap. 13.*—A Dutch sailor had tamed a sea-calf to such a degree, that it performed a hundred monkey tricks; *Voyag. de Missou, tom. 3. p. 113.*

† On the coasts of Canada, we often heard, during the night, the voice of the sea-wolves, resembling nearly that of cats making love; *Hist. de la Nouv. France, par l'Escarbot, p. 600.*—When we reached the island of Juan Fernandes, we heard the sea-wolves crying day and night, some of them bleated like lambs, and others barked like dogs, or howled like wolves; *Woods Rogers, p. 206.*

‡ As the seals are destined to remain a long time in the water,

and, consequently, he alone can dispense with respiration, the elements of air and water being equally agreeable to him. The otter and beaver are not really amphibious, since air is their proper element; and, as they are deprived of this aperture through the septum of the heart, they cannot remain long under water, but are obliged either to leave it, or to raise their heads above it, in order to respire.

But these advantages, which are great, are balanced by imperfections still greater. The seal is a kind of crippled animal. His arms, thighs, and legs, are almost entirely shut up within his body. Nothing appears without, except his hands and feet, which are, it is true, divided into five fingers; but these fingers are not separately moveable, being united by a strong membrane; and these extremities are rather fins than hands and feet, a kind of instruments adapted for swimming, and not for walking. Besides, the feet are directed backward, like the tail, and cannot support the body of the animal, which, when on land, is under the necessity of trailing

ter, and, as the transmission of the blood through the lungs cannot be performed without respiration, they have the foramen ovale open, as in the foetus, which never respire. It is an aperture which makes a communication between the right ventricle of the heart and the left, and allows the blood to pass directly from the cava into the aorta, instead of the long winding course of the lungs; *Hist. de l'Acad. des sciences, tom. 1. p. 84.*

trailing itself like a reptile *. This motion must be painful; for his body being unable to bend in the form of an arch, like the serpents, in order to obtain different points of support, and to advance by means of the reaction of the ground, the seal would remain fixed in the same place, were it not for his hands and tail, which he attaches to whatever he can lay hold of, and uses them with such dexterity, that he mounts very quickly upon a high shore, upon a rock, and even upon a board of ice, though slippery and steep †.

He

* The sea-wolves on the coast of Canada, which some call *sea calves*, are as large as big dogs. They keep almost perpetually in the water, never removing to any distance from the margin of the sea. These animals rather crawl than walk; for, when out of the water, they only slide along the sand or mud.—The females bring forth their young upon rocks or small islands. They live upon fishes, and are fond of cold countries; *Voyage de la Hontan, tom. 2. p. 45.* The seals are as big as calves, the head of them like a dog, therefore called by the Dutch the *sea hounds*. Under each shoulder grows a long thick fin: These serve them to swim with when in the sea, and are instead of legs to them when on the land for raising their bodies up on end, by the help of these fins or stumps, and so having their tail-parts drawn close under them, they rebound as it were, and throw their bodies forward, drawing their hinder parts after them; and then again rising up, and springing forward with their fore parts alternately, they lie tumbling thus up and down, all the while they are moving on land; *Dampier's voyage, p. 89.*

† The sea-calves have very sharp teeth, with which they cut a sick as thick as a man's arm. Though they appear to be lame behind, they climb the boards of ice, upon which they sleep.—The sea-calves which frequent the coasts are fatter, and yield more oil than those that inhabit the ice.—

We

He walks more rapidly than one would imagine, and, though wounded, he often escapes from the hunters by flight *.

The seals live in society, or, at least, great numbers of them frequent the same places. The north is their natural climate, though they can live in the temperate zones, and even in warm climates; for we find some of them upon the coasts of almost every European sea, not excluding the Mediterranean. They are likewise seen in the southern seas of Africa and America †. But they are infinitely more numerous in the northern seas of Asia, Europe ‡, and America; and

We sometimes find numbers of sea-calves upon such high and precipitous boards of ice, that it is astonishing how they should be able to climb them; *Descript. de la pêche de la baleine, par Zergdrager, p. 193.*

* I gave several strokes of my sword to a sea-calf, which prevented it not from outrunning me; and it plunged into the water, from which I never saw it rise again; *Recueil des voyages du Nord, tom. 2. p. 136.*

† The sea-calves are frequent in the northern parts of Europe and America, and in the southern parts of Africa, as about the Cape of Good Hope, and at the Streights of Magellan: And though I never saw any in the West Indies, but in the Bay of Campeachy, at certain islands called the Alcornoques, and at others called the Deserts; yet they are over all the American coasts of the South Seas, from Terra del Fuogo, up to the Equinoctial line; but to the north of the Equinox again, in these seas, I never saw any, till as far as ar north lat. Nor did I ever see any in the East Indies; *Dampier's voyage, p. 90.*

‡ In mari Bothnico et Finnico, maxima vitulorum mariporum sive phocarum multitudo reperitur; *Ol. Maga. de Gent. Septent. p. 163.*—On the west coast of Greenland, we find

and they are also very common in Magellan's Straits, the island of Juan Fernandez *, &c. In different climates, the species varies in size, colour, and even in figure. We have seen some of these animals alive, and are possessed of several stuffed skins. From this number we have selected two for the engraver. The first is the common seal † of our ocean, of which there are several

find many sea-calves, but very few about Spitzbergen.——

The largest sea-calves are generally from five to eight feet long, and they furnish the best oil.——They are as fond of sporting on the ice as on land; and whole flocks of them are sometimes collected on the same board of ice.——The sea-calves are chiefly taken between the 74th and 77th degree, upon the western borders of the ice. They are also taken every year in Davis's Straits, and near Nova Zembla; *Descript. de la pêche de Baleine, par Corneille Zorgdrager, vol. 1. p. 192. translated from the German by M. le Marquis de Montmirail.*

The seals come to the island of Juan Fernandez in the month of September to bring forth their young. They are then so fierce, that, instead of retiring from man, they advance in order to bite him, though armed with a bludgeon. . . . The margin of the sea is sometimes covered with them to the extent of more than half a mile; *Wood's Rogers.*

† Common seal with large black eyes; large whiskers; oblong nostrils; flat head and nose; tongue forked at the end; two canine teeth in each jaw, six cutting teeth in the upper jaw, and four in the lower; no external ears; body covered with thick short hair; short tail; and five palmated toes on each foot, furnished with strong sharp claws. The usual length is from five to six feet. The colour is very various, dusky, brinded, or spotted with white or yellow; *Pennant's synops. of quad. p. 339.*

Phoca; Arist. hist. anim. lib. 6. c. 12. Oppian. Halieut. v. 376. Gefner. pisc. p. 830. Worm. Mus. p. 289. Klein. quad. p. 93. Briffon, quad. p. 162.

Vitulus

several varieties. We have seen one which seemed to differ in the proportions of its body from the common kind; for its neck was shorter, its body longer, and its claws larger. But these differences are not sufficient to constitute a distinct species. The second is the seal of the Mediterranean and southern seas, which we presume to be the *phoca* of the ancients, and a distinct species; for it differs from the others by the quality of its hair, which is flowing and almost black, while that of the common kind is gray and coarse. It differs still more in the form of the teeth and ears; for it has a kind of small external ear, which the other wants: Its cutting teeth also terminate in two points, while those of the other are smooth and sharp edged, like those of the dog, wolf, and other quadrupeds. Its arms are likewise placed lower or more behind. These discrepancies, however, are perhaps only varieties depending on the climate, and not specific differences; especially as, in places where the seals abound, we find them larger and smaller,

VOL. VII.

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ler,

Vitulus maris Mediterranei et oceani; *Roddelet. p. 453. 458.*

Le veau marin ou loup de mer; *Belon, p. 25.*

Seal, seole, or sea-calf, *phoca* sive *vitulus marinus*; *Rail synopf. quad. p. 189. Phil. transf. vol. 47. p. 120. tab. 6. fig. 3.*

Kassigack; *Grantz. Hist. of Greenland. vol. 1. p. 123.*

Phoca vitulina, capite laevi inauriculato; *Linn. syst. nat. p. 56.*

Sial; *Faun. Suec. No. 4.*

Le phoque; *Buffon.*

Seal; *British zoology, vol. 1. p. 712.*

ter, thicker and thinner, and of various colours, according to their sex and age *.

It was from a conformity which, at first view, might appear slight, joined to some fugitive relations, that we judged this second or little seal to be the phoca of the antients. We have been assured, that the individual in our possession was brought from India; and it is very probable that it came from the Levant. It was an adult; for it wanted no teeth. Its size was at least a fifth part less than that of the full grown seals in our seas, and two-thirds less than those in the frozen sea; for it exceeded not two feet three inches in length, white

* Canities ut homini et equo, sic quoque vitulo marino accidit; *Olai Magn. de gent. sept.* p. 165.—The sea-calves are covered with short hair, of various colours: Some of them are black and white, others yellow, gray, and even red; *Dr. script. de la pêche de Baleine, par Zorgdrager*, p. 191.—Near the bay of St Matthew, in Magellan's Straits, we discovered two islands, where the sea-wolves were so numerous, that we could have loaded our five vessels with them in two hours. They were of different colours, and of the size of a calf; *Hist. des navigat. aux Terres Australes*, tom. 1. p. 127.—The sea-calves of Spitzbergen have their heads of different figures: Some of them are rounder, others longer and thinner under the muzzle. — They vary in colour. — Some of them are spotted like tigers; others are spotted with black and white: Some of them are yellow, others gray, and others red. — In some, the pupils of the eyes are of a crystalline colour, in others white, in others yellowish, and in others reddish; *Recueil des voyages du Nord*, tom. 2. p. 118.—The skin of the sea-calf is covered with short hair of various colours. Some of these animals are white, as the whole of them are when first brought forth; and, as they grow up, some become black, others red, and others have a mixture of all these colours; *Charlevoix*, tom. 3. p. 147.

while that described by Mr Parsons, though not an adult, as it wanted several teeth, was seven feet and a half. Now, the characters which the antients ascribe to their *phoca* correspond not with an animal of such magnitude, but apply to this small seal, which they frequently compare to the beaver and otter, animals that never can be compared with the large seals of the north. There is another relation, which, though false in its object, could never be attributed to our seals, or to those of the northern seas. The antients, when treating of the *phoca*, tell us, that its hair waves, and, from a natural sympathy, follows the motions of the sea; that it lies backward when the tide ebbs, and forward when it flows*; and that this singular effect continues long after the skin has been separated from the animal. Now, this quality could never have been imagined with regard to our seals or those of the north; because the hair of both is short and stiff. But it agrees, in some measure, with the small seal, whose hair is waving, and much longer and suppler than that of the other kinds. In general, seals of the southern have

* *Pelles eorum etiam detractas corpori sensum aequorum retinere tradunt, temper aestu maris recedente inhorrescere; Plin. hist. nat. lib. 9. cap. 13.*—Severinus asserts, that he saw this wonderful appearance; but he expresses it with such exaggeration as destroys its credibility. When the north wind blows, says he, the hairs which had been raised by the south wind, fall down so close, that they seem to disappear; *Mém. pour servir à l'hist. des animaux, part. 1. p. 193.*

have finer and softer hair than those of the northern seas*. Besides, Cardan affirms positively†, that this quality, which had been considered as fabulous, is found to be real in the Indies. Without giving more faith to Cardan's assertion than it deserves, it at least shows, that this quality is peculiar to the Indian seal. Perhaps the appearance, if it exists, is electrical; and both antients and moderns, being ignorant of the cause, have ascribed the effect to the ebbing and flowing of the sea. But, however this matter stands, the reasons already given are sufficient to found a presumption that the small seal is the *phoca* of the antients. It is likewise probable that it is the same with Rondeletius's *Mediterranean seal*‡, which, he remarks, has a body proportionally longer and thinner than the seal of the ocean. The large seal, of which Mr Parsons has given a figure and description, and which was probably brought from the northern seas, seems to be a species distinct from the other two; for, though so young as to have hardly any teeth, it was more than double the magnitude of the common kind||.

M,

* At the island of Juan Fernandes, the sea-calves have a fur so fine, and so short, that I have seen nothing equal to it elsewhere; *Dampier*, vol. 1. p. 118.

† Cardan de subtilitate, lib. 10.

‡ Rondelet. de piscibus, lib. 16.

|| Great seal, resembling the common, but grows to the length of twelve feet: (A gentleman of my acquaintance shot
one

M. Klein *, as well as Mr Parsons †, have said a great deal concerning this animal in a few words.

From

one of that size in the north of Scotland). That described in the Philosophical Transactions was seven feet and a half long, yet so young as to have scarce any teeth. The common seal is at full growth when it has attained the length of six. It inhabits the coasts of Scotland, and the south of Greenland; Pennant: *synops. of quad.* p. 341.

Ulluk; *Grantz's Greenland*, vol. 1. p. 125.

* Klein de quad. p. 93.

† This sea-calf was shewed at Charing-cross, London, in the month of February 1742. . . . The figures given by Aldrovandus, Johnston, and others, being profiles, lead us into two errors: 1st, They make a cubit in the fore limb, which is not visible in any shape, from the surface of the body: And, 2dly, make the posterior parts terminate in two fins, which, on the contrary, are actually webbed feet, like those of water fowl, consisting of five toes, each having three articulations, and ending with nails of a darkish colour. The nails of the fore paws are very considerable, being, like the paws of a mole, contrived for crawling upon land, and partly for swimming, by a narrower web between each toe; but the hinder feet are extensive webs, serving alone to drive or row the creature in the waters. . . . The animal, which was a female, died yesterday morning, Feb. 16. and the *viscera* were as follows: The stomachs, intestines, bladder, kidneys, ureters, diaphragm, lungs, great blood-vessels, and *pudenda*, were like those of a cow. The hairs of the whiskers are very long and clear. The spleen was two feet long, four inches broad, and very thin. The liver consisted of six lobes, each hanging as long and lank as the spleen, with a very small gall-bladder. The heart was long and flabby in its contexture in general; having a large *foramen ovale*, and very great *columnae carnosae*. In the lower stomach were about four pounds weight of flinty pebbles, of which these I have the honour to lay before you are part; all which are sharp and angular, as if the animal chose them of that form for cutting the food. — The

uterus

From what has been remarked, it appears, that there are three distinct species of the seal: The small black seal of India and the Levant, the common seal of our seas, and the large seal of the northern ocean. To the first of which, all that the antients have written concerning the *phoca* must be referred. Aristotle knew this animal; for he tells us, that it is of an ambiguous nature, an intermediate creature between aquatic and terrestrial animals; that it is an imperfect quadruped; that it has no external ears, but only two conspicuous auditory passages; and that it has a forked tongue, paps for suckling, and a small tail like that of the stag. But he seems to have been deceived when he says, that this animal has no gall-bladder. Mr Parsons, indeed, acknowledges, that the gall-bladder of the large seal he has described was very small. M. Daubenton, however, found, in our seal, which he dissected, that the gall-bladder was proportioned to the size of the liver; and the

Gentlemen

uterus is of the horned kind, each *cornu* being considerably thicker than the body, or duct leading to them.——The *ovaria* are very large, being granulated on the surface with the *ova*, under a very thin membrane; and the opening into the tubes leading to the *cornua* is a great hole. I have annexed a drawing of this part—as well as of the animal itself, which is thought perfectly like the original. The animal is viviparous, and suckles its young by the mamillae, like quadrupeds, and its flesh is carnos and muscular. This was very young, though seven feet and a half in length, having scarce any teeth, and having four holes regularly placed about the navel; *Phil. Transf. No. 469. p. 383.*

Gentlemen of the Academy found a gall-bladder in the seal they describe; but mention not that it was remarkable small.

Aristotle, besides, could have no knowledge of the large seals produced in the frozen sea; because, in his time, the whole north of Europe and of Asia were entirely unknown. The Greeks, and even the Romans, regarded France and Germany as their north. The Greeks, particularly, knew none of the animals peculiar to these countries. Hence Aristotle, who mentions the *phoca* as a common animal, can mean nothing else than the Mediterranean seal.

These three animals, though different in species, have many common properties, and ought to be regarded as of the same nature. The females bring forth in winter, and place their young upon a bank of sand, a rock, or a small island. They sit on their hind legs*, to allow their young to suck; and they continue to nourish them in this manner during twelve or fifteen days, without removing them from the place of their birth. After which the mother carries them to the sea, and learns them to swim and to search for food. When fatigued, she places them on her back. As every litter consists only of two or three, her cares are not much divided, and their education

is.

* The seals have two fins on each side the rump, which serve instead of a tail in the sea; and, on land, they sit on them, when they give suck to their young; *Dampier, vol. 1. p. 82.*

is soon completed. Besides, nature has bestowed on these animals uncommon sagacity and sentiment. When assistance is necessary, they understand and mutually aid one another. The young know their mother in the midst of a numerous troop. They distinguish her voice, and when she calls, they never fail to come. We know not the period of gestation; but, if we judge of it from that of the growth, the duration of life, and the magnitude of the animal, it must be several months: It is some years before they acquire their full growth, and the duration of their life must be proportionally long. I am even inclined to believe that they live longer than is generally imagined, perhaps above a hundred years; for the cetaceous animals live much longer than the quadrupeds; and, as the seal is the intermediate link between both, it ought to partake of the nature of the former, and, of course, enjoy life longer than the latter.

The voice of the seal has been compared to the barking of a hoarse dog. When young, it is clearer, and resembles the mewling of a cat. The young, when carried off from the mother, mew continually, and sometimes die of hunger rather than take the food that is offered to them. The old seals bark at those who strike them, and use every effort to bite and avenge themselves. In general, they are not very timid, and even show marks of courage. Instead of being afraid

at lightening, or thunder, they seem to be entertained with it. During a tempest, they leave the water, and even the ice, to avoid the shock of the waves; and they come upon the land to amuse themselves with the storm, and to receive the rain, of which they are exceedingly fond. They have naturally a disagreeable smell, which is felt at a great distance, when numbers of them are collected in one place. When pursued, they frequently void their excrements, which are yellow, and diffuse an abominable odour. They have a great quantity of blood; and, as they are likewise loaded with fat, they are heavy and sluggish. They sleep much, and very sound*. They love to sleep in the sun, upon boards of ice, and upon rocks; and they may be approached without waking them. This is the most common mode of seizing them. They are seldom shot, because, though the ball enters their head, they do not die suddenly, but spring into the water, and the hunter loses them. As they may be approached very near when asleep, or when at a distance from the sea, their motion being slow, they are assaulted with clubs and poles. They are very robust and tenacious of life. * They die not easily, a traveller remarks;

VOL. VII. X x for,

* Nullum animal graviore somno premitur. Pinnis quibus in mari utuntur, humi quoque pedum vice serpunt; sursum deorsumque claudicantium more se moventes. . . Capitur dormiens vitulus marinus, præsertim Romano iudicio, quia profundissime dormit; *Ol. Magn. de Gent. sept. p. 165.*

‘ for, though mortally wounded, their blood almost entirely exhausted, and their skin taken off, they still live; and it is frightful to see them, in this condition, weltering in their blood. We killed one which was eight feet long; After skinning it, and taking out most of the fat, notwithstanding all the blows it had received on the head and muzzle, it still endeavoured to bite, and even seized a cutlass with nearly as much vigour as if it had not been wounded. We afterwards thrust a sword across the heart and liver, from which there issued as great a quantity of blood as comes from an ox;’ *Recueil des Voyages du Nord*, tom. 2, p. 117.

The hunting of these animals, though not difficult, is very profitable; for the flesh makes tolerable food*, and the skin is a good fur:

* The second species of sea-wolves (*seals*) is smaller than the first (*walrus*). They bring forth their young on land, on the islands, upon the sand, upon rocks, &c. — The savages make war with these animals. Their flesh is good, and their oil is used as a dainty at all their feasts. These sea-wolves come ashore at all seasons, and never retire far from the land. In fine weather, they are found sleeping or basking in the sun upon the sands, or upon rocks. In some places, a band of two or three hundred of them may be seen on the shore. — They are easily killed. — All the materials for oil are collected about the bladder, into which the savages put it, after being melted. This oil is extremely good, and is employed for frying fish, and other purposes. It is as sweet and well flavoured as olive oil; and, when put into barrels, it leaves neither odour nor dregs; *Descript. de l’Amerique Septentr. par Denis*, tom. 2, p. 255.

fur*. The Americans make a kind of balls of it, which they fill with air, and use as rafts †. From their grease an oil is extracted, which is finer and better tasted than that of the porpoise and other cetaceous fishes.

To the three species of seals already mentioned, we may perhaps add a fourth, of which the author of Anson's voyage has given a figure and description under the name of the *sea lion* †.

This

* Beside the grease of the sea-calf, its skin sells for three, four, or five shillings, in proportion to its size and beauty; *Descript. de la pêche de la Baleine, par Zorgdrager, p. 196.*

Formerly great quantities of sea-wolver skins were used as muffs; these are now unfashionable, and the skins are employed in covering chests and trunks. When tanned, they have nearly the same grain as Turkey leather. They are not so fine; but they are not so easily scratched, and preserve their freshness for a long time. They make very good boots and shoes, which repel the water. Benches are likewise covered with them; and the wood fails sooner than the covering; *Hist. de la Nouvelle France, par le P. Charlevoix, tom. 3. p. 147.*

† Of their skins, a kind of balls are made, which, after being filled with air, are used as rafts or boats; *Mop. de l'Asie, p. 75.*

† Leonine seal. The male has an arched projecting snout, hanging five or six inches below the lower jaw. The feet are short and dusky, with five toes on each, furnished with nails. The hind feet have the appearance of great lacinated fins. It has large eyes, and great whiskers. The hair on the body is short, and of a dun colour; that on the neck a little longer. The skin is very thick. The length of an old male is twenty feet, and the greatest circumference fifteen.

Female. Nose blunt, tuberos at the top; nostrils wide; mouth breaking very little into the jaws; two small cutting teeth below, two small, and two larger, above; two canine teeth

This animal abounds on the Magellanic coast, and at the island of Juan Fernandez in the South Sea. These sea lions resemble the seal, which is likewise very common in the same latitudes; but they are much larger. When they have acquired their full growth, they are from eleven to eighteen feet long, and from seven or eight to eleven feet in circumference. They are so fat, that, after piercing the skin, which is an inch thick, there is at least a foot of blubber, before arriving at the flesh: One of them will yield five hundred pints of oil. They are, at the same time, very full of blood, which springs with great force when the animal is deeply wounded. Upon cutting the throat of an individual, two hogheads of blood were collected, besides what remained in the vessels of the body. Their skin is covered with short hair, of a clear tawny colour; but their tail and feet are blackish. Their

teeth remote from the preceding; five grinders in each jaw; all the teeth conic; eyes oblique and small; auricles none; fore legs twenty inches long; toes furnished with flat oblong nails; hind parts, instead of legs, divided into two great bifurcated fins; no tail; the whole covered with short rust-coloured hair; length, from nose to the end of the fins, four yards; greatest circumference two yards and a half; Pennant's *Synops. of quad.* p. 348.

Sea lion; *Dampier's voyag.* vol. 1. p. 90. vol. 4. p. 15. *Rogers's voyag.* p. 136. *Anson's voyag.* p. 122.

Leo marinus Russis siwutchka, Steller; *Nov. Com. Petrop.* vol. 2. p. 361. *Hist. Kamtschatka*, p. 120. *Müller's Exped.* p. 60.

Phoca leonina, capite antice cristato; *Linn. Syst. Nat.* p. 55. Le lion marin; *Buffon*.

toe are united by a membrane, which extends not to their extremity, and each of them is terminated by a claw. They differ from the common seals, not only in magnitude, but in other characters. The males have a kind of large crest, or trunk, which hangs from the end of the upper jaw to the length of five or six inches. This part is wanting in the females, which, beside their being much smaller, at once distinguishes them from the males. Each male carries about with him a troop of females, and allows no other male to approach. These animals are truly amphibious. They pass the summer in the sea, and the winter upon land. In this last season, the females bring forth, and produce but one or two at a time, which they suckle. A new born sea lion is as large as a full grown common seal.

During all the time the sea lions are upon land, they feed upon the herbage which grows on the banks of running waters. When not pasturing, they sleep in the mire. They are very indolent; and it is difficult to waken them: But they have the precaution of stationing males as sentinels round the places where they sleep; and those sentinels are said to give warning when danger approaches. Their cries are loud and of various tones. Sometimes they grunt like hogs, and sometimes snort like horses. The males often quarrel about the females, and inflict dreadful wounds with their teeth. The flesh of these animals

animals is tolerable food; the tongue, particularly, is equally good with that of an ox. It is very easy to kill them; for they can neither fly nor defend themselves. They are so unwieldy, that they can hardly move or turn themselves. A person has only to take care not to come too near their teeth, which are very strong, and with which they inflict mortal wounds.

From other observations, compared with the former, and from some conclusions to be deduced from them, it appears that these sea lions, which are found in the southern point of America, appear again, with little variety, on the northern coasts of the same Continent. The large seals of Canada, mentioned by Denis under the denomination of *sea wolves*, and which he distinguishes from the common seals, may be of the same species with the sea lions. Their young, this author remarks, when brought forth, are thicker and longer than the largest hog. Now, it is certain, that the seals of our ocean, though full grown, are never of this size. The Mediterranean seal, or the *phoca* of the ancients, is still less. There remain only the seals described by Parsons, whose magnitude corresponds with those of Denis †. Parsons does not mention the sea

* Anson's voyage round the world.

† To the testimony of Denis, we may still add that of P. Chr. Leclercq: Upon the coasts of North America, there are sea wolves, some of which are as large as horses and oxen. These sea wolves are called *Ouaspous*; *Relation de la Gaspésie*, p. 490.

sea where this large seal was found. But, whether it came from the North of Europe or from America, it might be the same with the sea wolf of Denis, and the sea lion of Anson; because its size is the same, since, though it had not nearly acquired its full growth, it was seven feet long. Besides, the most remarkable difference, next to that of magnitude, between the sea lion and the seal, is a large crest which the male of the former has upon the upper jaw; but the female has no such crest. Parsons did not see the male. He described the female only, which had no crest, and perfectly resembled the female sea lion of Anson. To these similarities, Parsons adds another, which is still more remarkable: He tells us, that his seal had the stomachs and intestines of a cow; and, at the same time, the author of Anson's voyages says, that the sea lion feeds upon herbage during the whole summer. Hence it is extremely probable, that the structure of these two animals is the same, or rather that they are the same animals, and very different from the other seals, who have but one stomach, and feed upon fishes.

Woods Rogers had mentioned, before the author of Anson's voyage, these sea lions on the coasts of South America, and describes them a little differently: 'The sea lion,' he remarks, 'is a very strange creature, and of a prodigious size. I have seen some of them above twenty feet long, and could not weigh less than four thousand pounds. Others were sixteen feet

in ' Voyage round the world by Woods Rogers.

in length, and might weigh about two thousand pounds. The quantity of oil they yielded was amazing. The figure of their body approaches to that of the sea calf; but their skin is thicker than that of an ox. The hair is short and coarse, the head disproportionally large, and the mouth remarkably big. The eyes are of a monstrous size. The muzzle resembles that of a lion, with terrible whiskers, the hairs of which are so stiff that they may serve for tooth-picks. About the end of the month of June, these animals repair to the island of Juan Fernandez, in order to produce their young, which they deposit about a gun-shot from the margin of the sea. There they remain till the end of September, without moving out of the place, and without taking any nourishment; at least, we never saw them eat. I observed some of them continue eight days in the same spot, and would not have abandoned it, if we had not frightened them. At the island of Lobos, on the coast of Peru, we saw some sea lions, and a greater number of seals*.

These observations of Woods Rogers, which correspond very well with those of the author of Anson's voyage, seem still farther to prove, that the sea lions feed upon herbage when they are on land; for it is by no means probable, that they pass three months without taking any nourishment, especially when suckling their young. Others were sixteen feet

* Voyage round the world by Woods Rogers.

In the collection of voyages to the South Sea, there are many remarks concerning these animals: But neither the facts nor descriptions appear to be exact. For example, it is said, that, in Magellan's straits*, there are sea wolves so large, that their skin, when extended, was thirty-six feet wide; which is unquestionably an exaggeration. We are also told, that, in the two islands of Port Desire, these animals resemble lions in the anterior part of their body, having the head, neck, and shoulders garnished with a very long bushy mane†. This is still a greater exaggeration; for the sea lions have only a little more hair on the neck than on the rest of the body; but this hair exceeds not an inch in length‡. It is farther remarked, that some of these animals are more than eighteen feet long; that many of them are only fourteen feet; and that, generally, they exceed not five§. This account would lead us to believe that there are two species, the one much larger than the other; because the author does not inform us whether this difference was owing to the difference of their ages, which, however, was necessary to prevent error. 'These animals,' says Coreal||, 'keep their mouths always open: Two men are hardly able to kill one of them with a

VOL. VII. Y y I spear,

* Navigation aux Terres Australes, tom. 1. p. 168.

† Idem, tom. 1. p. 221.

‡ Hist. du Paraguay, par le P. Charlevoix, tom. 6 p. 181.

§ Navigations aux Terres Australes, tom. 2. p. 11.

|| Voyage de Coreal, tom. 2. p. 180.

‘ spear, which is the best weapon to use against
 ‘ them. The female suckles four or five young,
 ‘ and drives away any other young ones which
 ‘ approach her : From this circumstance I con-
 ‘ cluded that the females bring forth four or five
 ‘ at a litter.’ This conjecture seems to be well
 founded ; for the seal described by Mr Parsons
 had four paps, situated in such a manner as to
 form a square, in the centre of which the navel
 is placed. I thought it proper to collect all the
 facts relative to these animals, which are very
 little known. It were to be wished that some
 sensible traveller would furnish us with a proper
 description of them, and particularly of their in-
 ternal parts, as the stomach, intestines, &c. ; for,
 if the testimony of voyagers could be relied on,
 we would believe that the sea lions belong to
 the class of ruminating animals ; that they have
 several stomachs ; and, consequently, that their
 species is far removed from that of the seal, or
 sea calf, which certainly has but one stomach,
 and ought to be ranked with the carnivorous
 tribes.

The WALRUS *, MORSE, or SEA COW.

THE denomination of *sea cow*, under which
 the walrus is most generally known, has been
 ill,

* The arctic walrus, with two great tusks in the upper jaw,
 pointed

ill applied †; for the animal it denotes has no resemblance to a cow. The name *sea elephant*, which others have given it, is better imagined, because it is founded on a conspicuous character: The walrus, like the elephant, has two large ivory tusks which proceed from the upper jaw; and its head, if it had a trunk, would have

pointed downwards; four grinders on both sides, above and below; no cutting teeth; five palmated toes on each foot; a round head; small mouth; very thick lips covered above and below with pellucid bristles as thick as a straw; small fiery eyes; two small orifices instead of ears; short neck; body thick in the middle, tapering towards the tail; skin thick, wrinkled, with short brownish hairs thinly dispersed; legs short; five toes on each foot, all connected by webs, and small nails on each; the hind feet very broad; each leg loosely articulated; the hind legs generally extended on a line with the body; tail very short; penis long; the length, from nose to tail, sometimes eighteen feet, and ten or twelve round in the thickest part. The tusks have been sometimes found of the weight of twenty pounds each; *Pennant's synopsis of quadrupeds*. p. 336.

Morse, the Russian name of this animal.

Walrus, *Mors*, *Rosmarus*; *Worm. Mus.* p. 289. *Raii synopsis quadrupedum*. p. 194. *Laet.* p. 41. *Jobnst. de piscibus*, p. 160. *tab.* 44.

Sea horse, or morse; *Marten's Spitzberg.* p. 107. 182. *Egede's Greenland*, p. 82.

Sea cow; *Grantz's Greenland*, vol. 1. p. 125.

Odobenus. *La Vache marine*; *Briffon. quadrupedes*. p. 30.

Trichecus rosomarus, *dentibus laniariis superioribus exsertis*; *Linn. sist. nat.* p. 49

† The name *sea cow*, as well as *sea calf*, has perhaps been derived from this circumstance, that the walrus and seal sometimes cry like the lowing of a cow or calf: 'Ipsis,' says Pliny, speaking of the seals, 'in somno mugitus, unde nomen vituli;' *lib. 9. cap.* 13.

have a great resemblance to that of the elephant. The walrus not only wants this instrument, which serves the elephant for an arm and hand, but it has not the use of its arms and legs, which, as in the seals, are inclosed within the skin, the hands and feet being alone free. The body is long, swelled before, narrow behind, and every where covered with short hair. The fingers of the hands and feet are enveloped in a membrane, and terminated by sharp, short claws. Thick hairs, in the form of whiskers, surround the mouth. The tongue is furrowed. It has no external ears; so that the walrus, if we except the two large tusks which change the form of the head, and the want of cutting teeth both above and below, resembles the seal in every other article: It is only much larger and stronger. The largest seals exceed not seven or eight feet. The walrus is generally twelve; and some of them are sixteen feet long, and eight or nine in circumference. Both animals inhabit the same seas, and are almost always found together. They have many common habits: They live equally in water or on land: They both climb upon boards of ice: They suckle and manage their young in the same manner: They live on the same food, and associate in large troops. But the species of the walrus is not so much diversified as that of the seal. Neither does it stray to such distances, but is more attached to its proper climate; for it is seldom seen any
where

where but in the northern seas. Hence the ancients were acquainted with the seal, but had no knowledge of the walrus.

This animal is mentioned by most voyagers who have frequented the northern seas of Asia*, Europe,

* We find the tusks of the walrus in the environs of Nova Zembla, and in all the islands, as far as the Oby. They are said to be frequent about Jeniski, and they were seen formerly as far as Pjafida. We again meet with them at Schalaginskoi, and among the Schuktschii, where they are very large. . . . It is probable that these animals are very numerous from this place to the river Anadir; for all the tusks sold at Jakutzk are brought from Anadirskoi. They are likewise found in Hudson's straits, where they are a Russian ell in length, and as thick as a man's arm. Their ivory is equally good with that of the elephant's tusks; *Voyage du Nord, tom. 6. p. 7.*——At Jakutzk, I saw some teeth of the walrus which were a Russian ell and a quarter, and others an ell and a half in length. They are commonly broader than thick, and are about four inches wide at the base. . . I never heard, that, in the neighbourhood of Anadirskoi, the walrus was hunted or fished to procure its teeth, which come there in such numbers. On the contrary, I was assured, that the inhabitants found these teeth on the low shores, detached from the animal; and, consequently, that there was no occasion for killing the creatures. . . I have frequently been asked, whether the walrus of Anadirskoi was a different species from that found in the west passage of the frozen sea, because the teeth brought from the east coast are much larger than those which come from the west. . . It appears that the walrus of Greenland, and that on the west of the frozen sea, have no communication with those found to the east of Kolima, about the point of Schalaginskoi, and, still farther, near Anadirskoi. Neither do those of Hudson's bay seem to join those of Tschuktschi. . . . It is universally agreed, however, that the walrus of Anadirskoi differs neither in size nor figure from that

Europe, and America *. But, as Zorgdrager appears to speak of it with greater intelligence than any other author, I shall here give a translation of what he has said on this subject, which was communicated to me by the Marquis de Montmirail †.

‘ In Horisont and Klock bays, the walrus and
 ‘ seals were formerly very numerous; but few
 ‘ of them now remain. . . . During the heat
 ‘ of summer, both of them resort to the neigh-
 ‘ bouring plains, and are sometimes seen in
 ‘ troops of one or two hundred, particularly the
 ‘ walrus, who can continue there for several
 ‘ days running, till hunger forces him back to
 ‘ the sea. These animals have a great resem-
 ‘ blance to the seal; but they are stronger and
 ‘ larger. Like the seal, they have five toes or
 ‘ pats;

that of Greenland, &c.; *Voyage de Gmelin en Sibirie, tom. 3. p. 148.*—*Note.* M. Gmelin has not resolved this question, though I think it may be answered in a satisfactory manner. He remarks, that these animals are neither hunted at Anadirskoi, nor on the eastern part of the frozen sea; and, consequently, no teeth are brought thither but those of the creatures who die a natural death: Of course, it is not surprising, that teeth, which have acquired their full growth, should be larger than those of the Greenland walrus, which is often killed when young.

* On the coasts of North America, we saw sea cows, called also *beasts with the large teeth*; because they have large tusks, as long as half of a man’s arm. . . . No ivory can be finer; and they are found on Sable island; *Descript. de l’Amerique septent. par Denis, tom. 2. p. 257.*

† *Descript. de la prise de la Baleine, et de la pêche du Greenland, &c. par Corneille Zorgdrager.*

‘ pats; but their claws are shorter, and their head
‘ thicker, rounder, and stronger. The skin
‘ of the walrus, especially about the neck, is an
‘ inch thick, wrinkled, and covered with very
‘ short hair of various colours. His upper jaw
‘ is armed with two tusks of half an ell, or an ell,
‘ in length, which are hollow at the root, and
‘ grow larger as the animal advances in years.
‘ They are sometimes observed to have but one
‘ tusk, having lost the other by fighting, or by
‘ age. This ivory is generally clearer than that
‘ of the elephant; because it is harder and more
‘ compact. The mouth of the walrus resem-
‘ bles that of an ox, and is garnished above and
‘ below with hollow, pointed hairs, about the
‘ thickness of a straw. Above the mouth are
‘ two nostrils, through which these animals
‘ blow the water, like the whale, without, how-
‘ ever, making much noise. Their eyes are
‘ sparkling, red, and inflamed during the heats
‘ of summer; and, as they cannot then endure
‘ the impression made by the salt water on their
‘ eyes, they continue more willingly on the
‘ land in summer than at any other time. . . .
‘ They are very numerous about Spitzbergen. . .
‘ They are killed on land with lances. . . They
‘ are hunted on account of the profit derived
‘ from their teeth and grease. Their oil is near-
‘ ly as much esteemed as that of the whale.
‘ Their teeth are of more value than the whole
‘ oil they yield. The internal part of the teeth,
‘ especially

' especially when large, the substance of which
 ' is harder and more compact than that of the
 ' smaller ones, is more precious than ivory.
 ' When a pound of the smaller kind is sold for
 ' a florin, a pound of the large brings three,
 ' four, and often five florins. A middle sized
 ' tooth weighs three pounds. . . . and an or-
 ' dinary walrus furnishes half a ton of oil.
 ' Hence the whole animal brings thirty-six
 ' florins, eighteen for the two teeth, and as
 ' much for the oil. . . . Formerly, vast troops
 ' of these animals were found on land. But
 ' our vessels, which go annually to the whale
 ' fishery, have so terrified them, that they have
 ' retired to the most sequestered places, and that
 ' those who remain never venture upon land in
 ' troops, but continue in the water, or dispersed
 ' among the boards of ice *. When a walrus
 ' is met with upon the ice, or in the water, a

* The number of these animals must be greatly reduced,
 or rather, most of them have retired to unknown coasts; for
 we find, in the collection of voyages to the north, that, in
 the year 1704, near Cherry island, in the latitude of 65 de-
 grees 45 minutes, the crew of an English vessel fell in with a
 prodigious number of these creatures, all lying near each o-
 ther; that, out of more than a thousand, of which this troop
 consisted, the sailors killed only fifteen; but that they found
 as many teeth as filled a ton—that, on the 13th of July, they
 killed a hundred more, of which they carried off only the
 teeth—that, in 1706, another English crew killed seven or
 eight hundred in six hours; in 1708, more than nine hun-
 dred in seven hours; in 1710, eight hundred in a few days;
 and that a single man slew forty with a spear.

' strong harpoon is darted at him, which not
 ' unfrequently slips upon the thick, hard, skin.
 ' But, when pierced, the animal is dragged with
 ' a cable toward the helm of the boat, is
 ' slain with a strong spear made for the purpose,
 ' and afterwards brought to the nearest shore,
 ' or to a flat board of ice. He is generally
 ' heavier than an ox. The fishers begin with
 ' taking off his skin, which, being of no value,
 ' is thrown away *. With a hatchet, they se-
 ' parate the two teeth from the head; or, to
 ' prevent the teeth from damage, they cut off
 ' the head, and boil it in a cauldron. The
 ' blubber is afterwards cut into long slices, and
 ' carried to the ship. . . . It is equally difficult
 ' to follow the walrus by rowing as the whale,
 ' and the harpoon is often darted in vain; because
 ' the whale is more easily pierced, and the har-
 ' poon does not so readily slip. . . The walrus is
 ' often struck three times with a strong, sharp
 ' spear, before his hard, thick skin is pierced.
 ' It is necessary, therefore, to strike him in a
 ' place where the skin is well stretched. For
 ' this reason, the fishers aim at the eyes of the
 ' animal, which obliges it to turn its head, and
 VOL. VII. Z z ' stretch

* Zorndrager seems to have been ignorant that a very
 good leather is made of this skin. I have seen strong coach
 braces made of it. Anderson, after Oother, says, that girths,
 and ropes for boats, are also made of this skin; *Hist. of Green-*
land, tom. 2. p. 160.

' stretch the skin of the throat or breast. Then
 ' the blow is given in this place, and the spear
 ' is quickly retracted, to prevent the creature
 ' from seizing it with his teeth, and wounding
 ' his assailant, either with his teeth, or even with
 ' the spear, which sometimes happens. The at-
 ' tack upon a small board of ice never lasts long;
 ' because the walrus, whether wounded or not,
 ' throws himself quickly into the water; and,
 ' therefore, attacking him upon land is always
 ' preferred. . . . These animals are only found
 ' in unfrequented places, as in the island of
 ' Moffen, behind Worland, in the lands sur-
 ' rounding Horisont and Klock bays, in retired
 ' plains, and banks of sand, where vessels rarely
 ' approach. Even those which are there met
 ' with, instructed by the persecutions they have
 ' suffered, are so much on their guard, that they
 ' keep always near the water, to facilitate their
 ' retreat. This fact I experienced on the large
 ' bank of sand behind Worland, called *Rif*,
 ' where I fell in with a troop of thirty or forty.
 ' Some of them were on the very margin of
 ' the water, and others at no great distance from
 ' it. We stopped some hours, without landing,
 ' in the hopes that they would advance farther
 ' into the plain. But, as this stratagem did not
 ' succeed, we landed with two boats to the
 ' right and left of them. Almost the whole of
 ' them were in the water the moment we put
 ' our

our feet on the land; so that our hunting was confined to the wounding of a few, which likewise instantly darted into the sea. Before being persecuted, these animals advanced far upon land; so that, in high tides, they were at a great distance from the water; and, when the tide ebbed, the distance being increased, they were easily assailed. We marched in front of these animals to cut off their retreat from the sea. They saw all these preparations without betraying any symptoms of fear; and each hunter often killed one of them, before it could regain the water. We made a barrier of the dead carcasses, and left some of our men in ambush to slay those which remained. We sometimes killed three or four hundred. From the prodigious quantity of teeth scattered over the ground, it is obvious that these animals must have formerly been very numerous. When wounded, they become furious, striking from one side to the other with their teeth. They break the arms, or drive them out of the hands of their assailants; and, at last, burning with rage, they place their head between their paws, or fins, and allow themselves to tumble into the sea. When very numerous, they grow so audacious, that, in order to secure one another, they surround the boats, and endeavour to overset them, by striking or piercing the planks with their teeth. In fine,

' fine, this elephant of the sea; before he became
' acquainted with men, was afraid of no ene-
' my; because he had learned to conquer the
' rapacious Greenland bear, which may be
' ranked among the number of sea-robbers.'

By adding to Zorgdrager's remarks those which are to be found in the Collection of Voy-
ages to the North*, and others that are scatter-
ed

* The sea horse (*walrus*) resembles the sea calf (*seal*), except that he is much larger; for he is of the size of an ox. His paws, both before and behind, like those of the sea calf, have five toes; but the claws are shorter. His head is likewise larger, rounder, and harder, than that of the sea calf. His skin, especially about the neck, is a full inch thick. Some of them are covered with mouse-coloured hair, and others have very little hair. They are generally so infested with scabs and excoriations, that one would imagine they had been flayed, especially about the joints, where the skin is much wrinkled. In the upper jaw they have two large tusks, which sometimes exceed two feet in length. The young ones have no tusks; but they grow as the animals advance in years. . . These tusks are more esteemed than the finest ivory; they are solid within, but hollow at the roots. . The opening of their mouth is as large as that of an ox; and, both above and below the lips, there are several bristles, which are hollow within; and as thick as a straw. . . Above the whiskers, there are semicircular nostrils, through which they throw out water, like the whales, but with much less noise. Their eyes are situated high above the nose, and they are as red as blood. Their ears are not far from their eyes, and resemble those of the seal. Their tongue is at least as large as that of an ox. — Their neck is so thick, that it is with difficulty they can turn their head, which obliges them to move their eyes almost continually. Their tail is short, like that of the seal. Their grease is not so easily removed as in the seals, because it is interlarded with flesh. — Their penis consists of a hard

ed in different relations, we shall have a pretty complete history of this animal. The species seems to have formerly been much more diffused than at present. They were found in the seas of the temperate zones, in the gulf of Canada*, upon the coasts of Acadia, &c. But they are

hard bone, about two feet long, which tapers toward the point, and is a little bended in the middle. Very near the belly, the penis is flat; but, beyond that, it is round, and covered with sinews. — These animals, it is probable, live upon herbs and fishes: Their dung resembles that of a horse. — When they dive, like the seals, they plunge their head first into the water. They sleep and snore, not only on the ice, but in the water; so that they frequently have the appearance of being dead. They are bold and furious, and defend each other to the last drop of their blood. — They exert every effort to relieve those which are taken. They assault the boat on all sides, biting and bellowing in a hideous manner; and if, by means of their number, they oblige the enemy to fly, they pursue the boat till they lose sight of it. — They are hunted solely for the sake of their teeth; but, out of a hundred, perhaps not above one tooth is found to be good; because some of them are too young, and others have spoiled teeth; *Recueil des voyages du Nord, tom. 2. p. 117.*

* In the latitude of 49 degrees, 40 minutes, there are three small islands in the gulf of St Laurence, upon one of which vast numbers of a certain species of seal come ashore. This animal, which, I believe, was unknown to the antients, is called *walrus* by the Flemings, and *morse* by the English, who have adopted its Russian name. It is an amphibious and a monstrous creature, and sometimes surpasses the Flanders oxen in thickness. Its hair resembles that of the seal. — They have two tusks bended downward, which are a cubit in length, and used for the same purposes as ivory, and bring an equal price; *Descript. des Indes Occidentales, par de Laët, p. 41.* — Upon the coasts of North America, there are sea cows, otherwise

are now confined to the seas of the frozen zones; and, even there, they are very scarce in places which are much frequented. There are few of them in the frozen seas of Europe, and still fewer in those of Greenland, Davis's straits, and other parts of North America; because, on account of the whale fishery, they have been long disturbed and hunted. From the end of the sixteenth century, the inhabitants of St Malo went to the Ramée islands in quest of the walruses, which were then very numerous *. It is not a hundred years since the merchants of Port-Royal in Canada sent barks to Cape Sable and Cape Fourchu to hunt these animals †, which have some time ago forsaken these latitudes, as well as those of the European seas; for they are now found in considerable numbers only in the frozen sea of Asia, from the mouth of the Oby to the most eastern point of that Continent, the coasts of which are very little frequented. They are rarely seen in the temperate seas. The species found under the Torrid Zone, and in the Indian ocean, is very different from our northern walrus. The latter seem

therwise called *beasts with the long teeth*; because they have two large tusks, about a cubit in length, and their other teeth are four inches long. No ivory can be finer. These animals are found on Sable island; *Descript. de l'Amerique Septent. par Denis, tom. 2. p. 257.*

* *Descript. des Indes Occidentales, par de Laët, p. 42.*

† *Descript. de l'Amerique Septent. par Denis, tom. 1. p. 66.*

seem to dread either the heat or the saltness of southern seas; and, as they have never traversed these seas, they are not found toward the South pole, though we see there the large and small seals of the North, which are even more numerous than in our Arctic regions.

The walrus, however, can live at least some time in a temperate climate. Edward Wort tells us, that he saw one of these animals alive in England, which was three months old; that it was put into water, for a short time only, each day; and that it crawled upon the ground. He does not say that it was incommoded by the heat of the air, but, on the contrary, that, when touched, it had the aspect of a furious and robust animal, and that it respired strongly through the nose. This young walrus was of the size of a calf, and had a great resemblance to the seal. Its head was round, its eyes large, and its nostrils flat and black, which it opened and shut at pleasure. It had no ears, but only two auditory passages. The opening of the mouth was not large; and the upper jaw was garnished with whiskers consisting of coarse, thick, cartilaginous hairs. The under jaw was triangular, the tongue thick and short, and the inside of the mouth fortified on each side with flat teeth. Both the fore and hind feet were broad, and the hind part of the body was perfectly similar to that of the seal. This hind part crawled, rather than walked. The fore feet turned forward,

forward, and those behind backward. They were all divided into five toes, covered with a strong membrane. The skin was thick, hard, and covered with short delicate hair, of an ash-colour. This animal grunted like a wild boar, and sometimes cried with a strong, deep voice. It was brought from Nova Zembla, and had not yet acquired the two large tusks; but, on the upper jaw, the knobs from which they were to spring were visible. It was fed with boiled oats or millet, which it rather slowly sucked than eat. It sprung with fury at its master, and made a growling noise. It followed him, however, when he presented meat to it*.

This account, which gives a tolerably just idea of the walrus, demonstrates, at the same time, that it can live in a temperate climate. Nevertheless, it does not appear that it could endure great heat, or has ever frequented the southern seas, so as to pass from the one pole to the other. Several voyagers mention sea cows which they have seen in India; but these belong to a different species: That of the walrus is always easily distinguished by its long tusks, which no other animal has, except the elephant. This production is an effect rarely exhibited in Nature; for, of all the terrestrial and amphibious animals, the elephant and walrus, in which alone it appears, are solitary species,

* Descript. des Indes Occidentales, par de Laët, p. 41.

species, and constitute distinct and undivided genera.

We are assured that the walruses couple not in the manner of quadrupeds, but backward. The male, like the whales, has a large bone in the penis. The females bring forth in winter upon the land, or upon boards of ice, and generally produce but one young at a time, which, when born, is as large as a hog of an year old. We are ignorant of the period of gestation; but, to judge of it from that of the growth, as well as the magnitude of the animal, it ought to be more than nine months. The walruses cannot remain always in the water; but are obliged to come upon land, either to suckle their young, or for other purposes. When under the necessity of climbing steep shores, or boards of ice, they use their teeth * and hands as hooks to drag along the unwieldy mass of their bodies. It is alledged, that they feed upon shell fishes, which adhere to the bottom of the sea; and that they use their tusks to disengage them †. Others affirm ‡, that they live upon a certain sea-herb with broad leaves, and that they nei-

VOL. VII.

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ther

* These teeth are not entirely round and smooth, but rather flat and slightly furrowed. The right tooth is commonly somewhat longer and stronger than the left. — I have had two of them, each of which was two feet and an inch long, and eight inches in circumference at the base; *Anderson's Nat. Hist. of Greenland.*

† Nat. hist. of Greenland, p. 162.

‡ Descript. des Indes Occidentales, par de Laët, p. 42.

they eat flesh nor fish. But I believe none of these to be true. The walrus, it is probable, lives upon prey, like the seal, and particularly on herrings and small fishes; for he eats none upon land, which obliges him to return to the sea in quest of food.

THE INDIAN WALRUS, or DUGON*.

The dugon is an animal of the African and East Indian seas, of which we have seen two heads, that have a greater resemblance to that of the walrus than to any other animal. Its head is deformed nearly in the same manner by the depth of the sockets from which the two tusks in the upper jaw spring. They are half a foot long, and are rather large cutting teeth than tusks. They extend not directly

* Indian walrus, with two short canine teeth, or tusks placed in the upper jaw, pretty close to each other. In the upper jaw are four grinders on each side; in the lower, three on each side; *Pennant's synopsis of quadrupeds*, p. 338.

Dugon, or *Dugung*, the name of this animal in the isle of Lethy or Leyte, one of the Philippine islands, where, according to Christ. Barchewick, it is also called *Ikan* and *Manate*. This last denomination would indicate that the *dugung* is a *manati* or *lamentin*. But this author, in his description, tells us, that the *dugung* has two tusks of an inch thick, and a span long. This character cannot apply to the *manati*, but agrees very well with the animal under consideration, of which we have a head.

ly out of the mouth, like those of the walrus; but are much shorter and more slender. Besides, they are situated in the fore part of the jaw, and very near each other, like cutting teeth. But, between the tusks of the walrus, there is a considerable interval; and they are not situated at the point, but at the side of the upper jaw. The grinders of the dugon differ likewise in number, position, and figure, from those of the walrus. From all which we must conclude, that the dugon is a distinct species. Several voyagers have confounded it with the sea lion. Innigo de Biervillas says, that a sea lion was killed at the Cape of Good Hope, which was ten feet long, and four thick. Its head resembled that of a calf of one year old. Its eyes were hideous, and its ears short; and it had a bristly beard, broad feet, and legs so short, that its belly touched the ground. He adds, that it had two tusks which issued half a foot out of the mouth*. This last character corresponds not with the sea lion, which has no tusks, but teeth like those of the seal. From this circumstance I concluded, that it was not a sea lion, but the animal to which we have given the name of *dugon*. Other travellers seem to have pointed it out under the denomination of the *sea bear*. Spilberg and Mandelslo relate, 'that, 'at the island of St Elisabeth, on the African 'coast, there are animals which should rather 'be

* Voyage d'Innigo Biervillas, part 1. p. 38.

‘ be called *sea bears* than *sea wolves* ; because,
 ‘ by their hair, their colour, and their head,
 ‘ they have a greater resemblance to the bear,
 ‘ only the muzzle is sharper ; that they resem-
 ‘ ble the bear still more in their manner of
 ‘ moving, except in the movement of the hind
 ‘ legs, which are only traileed ; that these am-
 ‘ phibious creatures have a terrible aspect, fly
 ‘ not from man, and bite with such force as to
 ‘ break the shaft of a javelin ; and that, though
 ‘ denied the use of their hind legs, they fail not
 ‘ to run with such swiftness that it is difficult
 ‘ for a man to overtake them *.’ Guat tells
 us, ‘ That he saw, at the Cape of Good Hope,
 ‘ a sea cow of a reddish colour. It had a
 ‘ thick round body, large eyes, long tusks,
 ‘ and a muzzle a little turned up. He adds,
 ‘ that he was assured by a mariner, that this a-
 ‘ nimal, of which he could see the fore part
 ‘ only, as it was in the water, had feet †.’ This
 sea cow of Guat, the sea bear of Spilberg, and
 the sea lion of Biervillas, appear to be the same
 animal with the dugon, whose head was sent to
 us from the Isle of France, and which, conse-
 quently, exists in the southern seas, from the
 Cape of Good Hope to the Philippine islands ‡.

Besides,

* Premier voyage de Spilberg, tom. 2. p. 437. Voyages
 de Mandellso, tom. 2. p. 551.

† Voyage de Le Guat, tom. 1. p. 36.

‡ I could see from my house, which was situated on a
 rock in the island of Lethy, the turtles at some fathoms deep

Besides, we cannot be certain that this animal, which has some resemblance to the walrus in the head and tusks, has four feet. We only presume from analogy, and the testimony of travellers, that it has these members. But, as the analogy is not very great, and the testimony of travellers not sufficiently explicit, we shall suspend our judgment on this subject, till we receive better information.

THE

in the water. I one day saw two large dugongs, or sea cows, which approached near the rock. I instantly informed my fisher, to whom I showed the two animals, which were moving about and eating a green moss that grows on the shore. He ran for his companions, who soon brought a boat to the place. During this time, the male came in quest of the female, and, being unwilling to leave her, allowed himself to be slain also. Each of these prodigious fishes was more than six ells long. The male was a little larger than the female. Their heads resembled that of an ox. *They had two large teeth, a span in length and an inch thick*, which protruded out of the jaw, like those of the wild bear. These teeth were as white as the finest ivory. The female had two breasts, like a woman; and the male organs of generation resembled those of a man. The intestines were like those of a cow, and the flesh had nearly the same taste; *Voyage de Christopher Barchewitz, p. 381.* Note. This description corresponds very well with the manati, except the teeth. The manati has neither tusks nor cutting teeth; for which reason I conjecture that this dugong was not the manati, but the animal under consideration,

THE MANATI.

IN the animal kingdom, the terrestrial tribes commence where the fishes terminate. The Manati,

* The manati has pinniform fore legs; hind parts ending in a tail, horizontally flat. These animals are of an enormous size; some of them are twenty-eight feet long, and eight thousand pounds in weight. The head, in proportion to the bulk of the animal, is small, oblong, and almost square. The nostrils are filled with short bristles. The gape, or *ristus*, is small. The lips are double. Near the junction of the two jaws, the mouth is full of white tubular bristles, which serve the same use as the laminae of whales, to prevent the food from running out with the water. The lips are also full of bristles, which serve instead of teeth to cut the strong roots of the sea plants, which, floating ashore, are a sign of the vicinity of these animals. In the mouth are no teeth, only two flat white bones, one in each jaw, one above, another below, with undulated surfaces, which serve instead of grinders. The eyes are extremely small, not larger than those of a sheep. The iris is black. It is destitute of ears, having only two orifices, so small that a quill will scarce enter them. The tongue is pointed, and but small. The neck is thick, and its junction with the head scarce distinguishable; and the last always hangs down. The circumference of the body near the shoulders is twelve feet, about the belly twenty, near the tail only four feet eight; the head thirty-one inches; the neck near seven feet: And, from these measurements, may be collected the deformity of this animal. Near the shoulders are two feet, or rather fins, which are only two feet two inches long, and have neither fingers nor nails; beneath they are concave, and covered with hard bristles. The tail is thick, strong, and horizontal, ending in a stiff black fin, and like the substance

Manati, which is neither a quadruped nor a whale, retains the two fore feet, or rather hands, of the former. But the hind legs, which, in the seal and walrus, are almost entirely included within substance of whalebone, and much split in the fore part; the end slightly divided.

The skin is very thick, black, and full of inequalities, like the bark of oak, and so hard as scarce to be cut with an ax, and has no hair on it. Beneath the skin, is a thick blubber, which tastes like oil of almonds. The flesh is coarser than beef, and will not soon putrify. The young ones taste like veal. The skin is used for shoes, and for covering the sides of boats; Pennant's *synops. of quad.* p. 355.

Manati; *Hernand. Mex.* p. 323. *De Laët*, p. 6.

Manatus; *Rondeletius*, p. 490. *Gesner. pisc.* p. 213. *Glas. exot.* p. 132. *Raii synops. quad.* p. 193. *Klein. quad.* p. 84. *Steller Nov. Com. Petrop. tom. 2.* p. 294.

Le lamantin; *Briffon. quad.* p. 164.

Trichechus; *Arted. gen.* 79. *Syn.* 109.

Trichechus manatus, dentibus laniariis inclusis; *Linn. fss. nat.* p. 49.

It is alledged that the name *lamantin* was applied to this animal, on account of its lamentable cries; which is entirely fabulous. This word is a corruption of the name given to the animal in the language of the Galibis, who inhabit Guiana, and of the Caribs, who live in the Antilles; for they are the same race of people, and have nearly the same language. They call the lamantin *manati*, from which the negroes of the French islands, who corrupt words of every kind, by adding the article, made it *lamanati*. From *lamanati* they still farther corrupted it into *lamannati*, and *lamenti*. After which it was supposed to be derived from *lamentari*, on account of the supposed lamentations of the female when deprived of her young; *Lettre de M. de la Condamine à M. de Buffon, du 28. Mai 1764.* It ought, however, to be remarked, that *manati* is a Spanish word, which, according to several authors, denotes an animal with hands.

within the body, and very much contracted, are totally obliterated in the manati. Instead of two short feet and a still shorter tail, which the walrus carries in a horizontal direction, the manati has only a large tail, which spreads out like a fan, in the same direction; so that, at first sight, the tail of the former seems to be divided into three, and that, in the latter, these three parts appear to be united into one. But, from a more attentive observation, and particularly from dissection, it appears, that no such union takes place; that there is not a vestige of thigh-bones and legs; and that the bones which compose the tail of the manati are simple vertebrae, similar to those of the cetaceous animals, who have no feet. Hence those animals are cetaceous by the hind part of their bodies, and are only allied to the quadrupeds by the two forefeet or hands on each side of their breast. Oviedo seems to be the first author who has given a kind of history and description of the manati: 'This animal,' he remarks, 'is pretty frequent on the coasts of St Domingo. He is very large, and of a deformed figure, with a head thicker than that of an ox, small eyes, and two feet or hands near the head, which serve him for swimming. He has no scales, but is covered with a very thick skin. He is a very gentle creature. He rises on the waves and eats the herbage on the shore, which he can reach without coming out of the water. He generally

' generally swims on the surface. In order to
 ' seize him, the people endeavour to approach
 ' him with a boat, and then dart at him a large
 ' arrow, fixed to a very long rope. As soon as
 ' he feels himself wounded, he runs off with
 ' the arrow and rope, to the extremity of which
 ' a large piece of cork or wood is tied, to serve
 ' as a buoy, that they may discover his route.
 ' When the animal is exhausted by the wound
 ' and loss of blood, he approaches the land.
 ' They then lay hold of the end of the rope, and
 ' coil it up, till only a few fathoms remain. By
 ' the aid of the waves, he is gradually brought
 ' to land, or they kill him in the water with
 ' spears. His weight is so great, that a carriage
 ' drawn with two oxen is necessary to transport
 ' him. His flesh is excellent, and, when fresh,
 ' is preferred to beef or fish. When cut into
 ' pieces and pickled, it in time acquires the taste
 ' of the tunny fish, and, in this state, it is most
 ' highly relished. Some of these animals are
 ' more than fifteen feet long by six in thickness.
 ' The hind part of the body is much thinner,
 ' and tapers toward the tail, which again spreads
 ' out at the extremity. As the Spaniards call
 ' the fore feet of all quadrupeds *hands*, and as
 ' this animal has only two fore feet, they have
 ' denominated it the *manati*, or the *animal with*
 ' *hands*. He has no external ears, but only two
 ' apertures through which he hears. On his
 ' skin there are only a few scattered hairs; it is

VOL. VII. B b b ' of

of an ash-colour, and an inch thick. Soles of shoes, belts, &c. are made of it. The female has two paps on her breast, and generally brings forth two young, which she suckles*. All these facts related by Oviedo are true; and it is singular, that Cieça†, and several subsequent writers, should affirm, that the manati comes often out of the water to pasture on the land. They have been led into this from the analogy of the walrus and seals, which frequently quit the water, and continue for some time on the land. But it is certain that the manati never leaves the water, and that he prefers fresh water to salt.

Clusius measured the skin of one of these animals, and found it to be sixteen feet and a half long, and seven feet and a half broad; the two feet or hands, were large, and armed with short claws. Gomara‡ assures us, that he sometimes found them of twenty feet in length; and adds, that they frequent the rivers as well as the sea. He relates, that a young manati was reared in a lake in the island of St Domingo during twenty-six years; that he was so gentle and tame, that he took peaceably the food which was presented to him; that he knew his name, and, when called upon, came out of the water, and crawled to the house to receive his victuals;

* Ferdin. Oviedo, hist. Ind. Occid. lib. 13. cap. 10.

† Chron. Peruv. cap. 31.

‡ Fr. Lopes de Gomara, hist. gen. cap. 31.

victuals; that he seemed to be pleased with the human voice, and the chanting of children; that he had no fear; that he allowed the boys to sit on his back, and carried them from one end of the lake to the other, without plunging them into the water, or doing them any injury. This relation cannot be true in all its circumstances: It seems to be accommodated to the fable of the antients concerning the dolphin; for the manati is unable to crawl on the ground.

Herrera says very little on this subject: He only assures us, that, though very large, the manati swims easily, makes no noise in the water, and dives when he hears any distant sound*.

Hernandes, who gives two figures of the manati, the one in profile and the other in front, hardly adds any thing to what had been said by former Spanish authors. He only remarks, that both the Atlantic and Pacific oceans, as well as the lakes, produce a deformed animal, called *Manati*, the description of which he copies almost entirely from Oviedo; and then adds, that the hands of this animal have five nails, like those of man; that it has a large navel and anus; that the vulva resembles that of a woman; that the penis is like that of a horse; that the flesh and grease are similar to those of a fat hog; that the ribs and viscera resemble those of a bull; that they couple on land, the female lying on her back; and that they produce but one young, which

* Descript. des Indes Occident. par Herrera, p. 57.

which is of a monstrous size the moment it is brought forth *. The copulation of these animals cannot take place on land, because they are unable to walk; but it is performed in shallow water. Binet † remarks, that the manati is of the size of an ox, and as round as a ton; that he has a small head, and very small tail; that his skin is as coarse and thick as that of the elephant; that some of them are so large as to yield more than six hundred pounds of excellent meat; that his grease is as mild as butter; that he delights in the mouths of rivers, where he browses the herbs which grow on the banks; that, in certain places, about ten or twelve leagues from Cayenne, they are so numerous, that a vessel may be filled with them in one day, by expert harpooneers. Father Tertre, who gives a long account of the fishing of the manati, agrees almost in every article with the authors we have quoted. He remarks, however, that this animal has only four toes and four claws on each hand; and adds, that he feeds upon a small sea-herb, which he browses in the same manner as an ox; and that, after being satiated with this food, he searches for the rivers and fresh waters, where he browses twice a day; that, when his belly is full, he sleeps with his muzzle half out of the water, which makes him observable at a distance; that the female brings forth

* Hernand. hist. Mex. p. 324.

† Voyage en l'île de Cayenne, par Antoine Binet, p. 346.

forth two young, which follow her every where ; and that, when the mother is taken, we are certain likewise of having the young, who never depart from her, even when dead, but go perpetually round the vessel which carries her *. This last fact appears to be very suspicious : It is contradicted by other voyagers, who assure us, that the manati produces but one at a time. As all large quadrupeds, and the whale tribes, produce one young only, analogy alone should prevent us from believing that the manati always brings forth two. Oexmelin remarks, that the tail of the manati is placed horizontally, like that of the cetaceous animals, and not vertically, like that of other fishes ; that it has no fore teeth, but only a kind of callosity as hard as a bone, with which it cuts the herbage ; that it has thirty-two grinders ; that it does not see well, on account of the smallness of its eyes, which secrete very little humour, and have no iris ; that its brain is small ; that, to supply the defect of good eyes, it has an excellent ear ; that it has no tongue ; that the organs of generation resemble those of man and woman more than any other animal ; that the milk of the females, which he had tasted, is very good ; that they produce but a single young one, which they embrace and carry with their hands ; that the mother suckles it during a whole year, after which it is in a condition to eat herbage, and provide
for

* Hist. gen. des Antilles, par le P. du Tertre.

for its own safety; that, from the neck to the tail, this animal has fifty-two vertebrae; that it feeds like the turtle, but can neither walk nor crawl on the ground*. All these facts are pretty exact, and even that of the fifty-two vertebrae; for M. Daubenton, in the foetus which he dissected, found twenty-eight vertebrae in the tail, sixteen in the back, and six, or rather seven, in the neck. This voyager is only deceived with regard to the tongue, which is not wanting in the manati. It is indeed fixed, almost to its extremity, to the under jaw. In the voyage to the American islands, we find a very good description of the manati, and the manner in which it is harpooned. The principal facts mentioned by this author correspond with those already quoted: But he remarks, 'That, since the coasts have been inhabited, this animal has become exceedingly rare in the Antilles; and that the one he saw and measured was fourteen feet nine inches from the muzzle to the origin of the tail. The whole body was round. The head was thick, and the mouth large, with great lips, and some long coarse hairs about them. The eyes were very small in proportion to the head; and the ears were only two small apertures. The neck is very thick and short; and, were it not for a small movement which makes it wrinkle, it would be impossible to distinguish the head from the body. Some authors

* Hist. des Avanturiers, par Oexmelin, tom. 12, p. 134.

‘ authors pretend,’ he adds, ‘ that this animal
‘ uses its two hands or fins for dragging itself
‘ along the ground. I made a particular inquiry
‘ concerning this fact. But no person had ever
‘ seen the animal on land ; and it is impossible
‘ that it should either walk or crawl, the fore
‘ feet, or hands, serving only to hold its young
‘ when sucking. The female has two paps,
‘ which I measured, and found each of them to
‘ be seven inches in diameter, by about four of
‘ elevation. The teat was an inch thick. The
‘ body was eight feet two inches in circumfe-
‘ rence. The tail was like a large pallet, nine-
‘ teen inches in length, fifteen inches broad at
‘ the widest part, and about three inches thick at
‘ the extremity. The skin of the back was
‘ double the thickness of an ox’s hide, but much
‘ thinner on the belly. It is of a brown slate
‘ colour, and of a coarse grain, with thick and
‘ pretty long hairs of the same colour, thin-
‘ ly scattered over the body. This manati weigh-
‘ ed about eight hundred pounds. Along with
‘ the mother, the young one was taken, which
‘ was nearly three feet long. A part of the tail
‘ was roasted on a spit, and we found it to be as
‘ good and delicate as veal. The herb upon
‘ which these animals feed is from eight to ten
‘ inches long, narrow, pointed, tender, and of a
‘ beautiful green colour. In some places, this
‘ herb is so abundant, that the bottom of the
‘ sea has the appearance of a meadow. The
‘ turtles

'turtles likewise feed upon it*,' &c. Father Magnin de Fribourg says, that the manati eats such grass as he can reach without coming out of the water. . . . That its eyes are about the size of a filberd; that its ears are so narrow as hardly to admit a probe; that, within the ears, there are two small perforated bones; that the Indians hang these bones to their neck as a trinket. . . . Its cry resembles the lowing of a cow†.

Father Gumilla relates, that there are immense numbers of the manati in the great lakes of the Oronoko: 'Each of these animals,' says he, 'weighs from six to seven hundred pounds. They feed upon herbs. Their eyes are very small, and the auditory passages still smaller. When the river is low, they come to pasture on its margin. The female always brings forth two young, which she carries at her paps, and holds them so firm with her two hands, that they never separate, whatever movement she makes. The young, when new born, weigh, each of them, thirty pounds. The milk of the female is very thick. Below the skin, which is much thicker than that of an ox, we find four strata, or layers; two of them consist of fat, and the other two of very tender, savory flesh, which, when roasted, has the flavour of pork and the taste of veal. These animals, when rain is about to fall, spring out
' of

* Nouv. Voy. aux îles de l'Amerique, tom. 2. p. 200.

† Extrait d'un MS. du Pere Magnin de Fribourg.

‘ of the water to a considerable height *.’ Both Gumilla and Tertre seem to be deceived, when they assert that the females produce two young at a time: For it is almost certain, as formerly remarked, that they bring forth one only.

In fine, M. de la Condamine, who obligingly communicated to me a drawing of the manati, made by himself, on the river of the Amazons, gives a more perfect account of the manners of this animal than any other author. ‘ Its flesh and ‘ fat,’ he remarks, ‘ are analogous to those of ‘ veal: Father Acuna renders the resemblance ‘ still more complete, by bestowing horns on it, ‘ which Nature never provided. It is not, pro- ‘ perly speaking, amphibious; for it cannot go ‘ entirely out of the water, having only, near ‘ the head, two flat fins, in the form of wings, ‘ about sixteen inches long, which serve it for ‘ arms and hands: He only advances his head ‘ out of the water, in order to reach the grass ‘ upon the shore. The one of which I drew a ‘ figure was a female. Its length was seven ‘ feet and a half, and its greatest width two feet. ‘ I have since seen them much larger. The eyes ‘ of this animal have no proportion to the size ‘ of its body; they are round, and only three ‘ lines in diameter. The auditory passages are ‘ still smaller, and appear only like pin holes. ‘ The manati is not peculiar to the river of the ‘ Amazons, but is equally common in the Oro-
VOL. VII. C c c ‘ noko.

* Hist. de l’Orenoque, par le P. Gumilla.

‘noko. It is also found, though not so frequently, in the Oyapoc, and in several other rivers in the neighbourhood of Cayenne, and on the coasts of Guiana, and probably elsewhere. This is the same animal which was formerly called *manati*, and now *lamantin*, at Cayenne, and in our American islands; but I believe the species is somewhat different. They are never met with in the high seas, and are even rare in the mouths of rivers. But they are found, at more than a thousand leagues from the sea, in most of the large rivers which fall into that of the Amazons, as in the Gualaga, the Pastaca, &c. In ascending the river of the Amazons, they are stopped by the Pongo (cataraët) of Borja, above which they never appear*.’

I have now given a concise account of all that is known concerning the manati. It were to be wished that some of the inhabitants of Cayenne, among whom there are several persons well acquainted with natural history, would examine this animal, and give us a description of its internal parts, particularly those of respiration, of digestion, and of generation. It appears, but we are by no means certain, that there is a large bone in the penis, and a foramen ovale in the heart; that the lungs are singularly constructed;

* Voyage sur la rivière des Amazones, par M. de la Condamine, p. 154. Mem. de l’Acad. des sciences, 1745. p. 464.

ed; and that it has several stomachs, as in the ruminating animals.

Besides, the species of the manati is not confined to the seas and rivers of the New World, but seems likewise to exist on the coasts and in the rivers of Africa. M. Adanson saw manatis in Senegal, from which he brought one of their heads and gave it to me; and, at the same time, he obliged me with a description of this animal, which he made on the spot, and which I here insert in his own words. ‘ I saw many of these
‘ animals. The largest exceeded not eight feet
‘ long, and weighed about eight hundred pounds.
‘ A female of five feet three inches in length,
‘ weighed only a hundred and ninety-four
‘ pounds. They are of a blackish ash-colour.
‘ There are hairs thinly scattered over the whole
‘ body, in the form of bristles, and are nine lines
‘ long. The head is conical, and of a middling
‘ size, in proportion to that of the body. The
‘ eyes are round and very small. The iris is of a
‘ deep blue colour, and the pupil black. The
‘ muzzle is almost cylindrical; the two jaws are
‘ nearly of an equal size, and the lips are thick
‘ and fleshy. It has no teeth but grinders in
‘ either jaw. The tongue is of an oval form,
‘ and attached, almost as far as the point, to
‘ the under jaw. It is singular, that almost all
‘ authors and travellers have given ears to this
‘ animal. I could not discover, in any of them,

‘ a

' a hole sufficient even to admit a small probe *.
 ' He has two arms or fins, situated at the ori-
 ' gin of the head, which is not distinguishable
 ' from the trunk by any kind of neck, or by
 ' shoulders that are perceptible. These arms
 ' are nearly cylindrical, and consist of three
 ' principal articulations; the anterior one forms
 ' a kind of flat hand, in which the toes are on-
 ' ly to be distinguished by four claws of a
 ' shining reddish brown colour. The tail is
 ' horizontal, like that of the whale; and it has
 ' the figure of a baker's shovel. The female
 ' has two paps, rather elliptic than round, and
 ' situated near the pits of the arms. The skin
 ' is half an inch thick on the belly, nine lines
 ' on the back, and an inch and a half on the
 ' head. The fat is white, and two or three
 ' inches thick. The flesh is of a pale red colour,
 ' and more delicate than veal. The Jalofo Ne-
 ' groes call this animal *Lereou*. It lives upon
 ' herbage, and is found in the mouth of the
 ' river Niger.'

From this description, it is obvious, that the
 manati of Senegal differs not from that of
 Cayenne; and, from a comparison made by M.
 Daubenton

* It is certain, however, that this animal has external au-
 ditory passages. M. de la Condamine informed me, that he
 had seen and measured them, and that they exceeded not half
 a line in diameter. As the manati has the power of con-
 tracting or shutting them, it is probable that they had escaped
 the observation of M. Adanson, especially as those passages
 are very small, even when the animal keeps them open.

Daubenton of the head of a Senegal manati with that of a foetus * of the Cayenne lamantin, he presumes that they are of the same species. The testimonies of travellers † correspond with our opinion: That of Dampier, in particular, is positive, and his remarks merit insertion: ‘ While we lay here, our Muskito men went in their canoe, and struck us some manatee, or sea cow. Besides this Blewfield’s river, I have
‘ seen

* This foetus was sent to us by M. le Chevalier Turgot, gouverneur of Guiana.

† Oexmelin relates, that there are lamantins on the coasts of Africa, and that they are more frequent on the Senegal coast than in the river Gambia; *Hist. des Avanturiers, tom. 2, p. 115*. Guat assures us, that he saw many of these animals off the island of Rodrigue. The head of the lamantin of this island, he remarks, resembles that of a hog, except that the snout is not so sharp. The large lamantins are about twenty feet in length.——This animal has warm blood, a coarse, hard, blackish skin, with some thinly scattered hairs on it, small eyes, and two holes, which it opens and shuts, and may be properly called its *ears*. As it often retracts its tongue, which is not large, several authors have imagined that it had none. It has grinders, but no cutting teeth; and its gums are sufficiently hard to enable it to browse herbage.——I never saw above one young along with the females, which inclines me to think that they bring forth one only at a time.——We sometimes found three or four hundred of these animals together. They feed upon a kind of herb which grows in the bottom of the sea. They were so gentle, that we often felt them, in order to select the fattest. We passed a rope under their tail to pull them out of the water. We never seized the largest, because they would have cost us too much labour: Besides, their flesh is not so delicate as that of the young.——We never observed this animal on land, where I suspect it could not crawl; and I believe that it is not amphibious; *Voyage de le Guat, tom. 1. p. 93*.

‘ seen of the manatee in the bay of Campeachy,
‘ on the coasts of Bocca del Drago, and Bocco
‘ del Toro, in the river of Darien, and among
‘ the South Keys, or little islands of Cuba. I
‘ have heard of there being found on the North
‘ of Jamaica a few, and in the rivers of Suri-
‘ nam in great multitudes, which is a very low
‘ land. I have seen of them also at Mindanea,
‘ one of the Philippine islands, and on the coast
‘ of New Holland. . . . The manatee delights
‘ to live in brackish water; and they are com-
‘ monly in creeks and rivers near the sea. It is
‘ for this reason, possibly, they are not seen in
‘ the South seas, that ever I could observe,
‘ where the coast is generally a bold shore, that
‘ is, high land, and deep water close home by
‘ it, with a high sea or great surges, except in
‘ the bay of Panama; yet even there is no ma-
‘ natee. Whereas the West Indies, being, as it
‘ were, one great bay composed of many smal-
‘ ler, are mostly low land and shoal water, and
‘ afford proper pasture, as I may say, for the
‘ manatee. Sometimes we find them in salt
‘ water, sometimes in fresh, but never far at
‘ sea. And those that live in the sea at such
‘ places where there is no river nor creek fit for
‘ them to enter, yet do commonly come once or
‘ twice in twenty-four hours to the mouth of
‘ any fresh water river that is near their place
‘ of abode. They live on grass seven or eight
‘ inches long, and of a narrow blade, which
‘ grows

Plate CCKLVIII.



SEAL.

Plate CCXLIX.



SMALL SEAL.

J. Bullen sculp.

Plate CCL.



WALRUS.

Plate CCLI.



A. Bell & Co. sculp.

YOUNG MONATI.

‘ grows in the sea in many places, especially a-
‘ mong islands near the main. This grass grow-
‘ eth likewise in creeks, or in great rivers near
‘ the sides of them, in such places where there
‘ is but little tide or current. They never come
‘ ashore, nor into shallower water than where
‘ they can swim. Their flesh is white, both
‘ the fat and the lean, and extraordinary sweet
‘ wholesome meat. The tail of a young cow
‘ is most esteemed; but, if old, both head and
‘ tail are very tough. A calf that sucks is the
‘ most delicate meat; privateers commonly roast
‘ them, as they do also great pieces cut out of
‘ the bellies of the old ones.’

OF

OF THE DEGENERATION OF ANIMALS.

WHENEVER man began to change his climate, and to migrate from one country to another, his nature was subjected to various alterations. In temperate countries, which we suppose to be adjacent to the place where he was originally produced, these alterations have been slight; but they augmented in proportion as he receded from this station: And, after many ages had elapsed; after he had traversed whole continents, and intermixed with races already degenerated by the influence of different climates; after he was habituated to the scorching heats of the South, and the frozen regions of the North; the changes he underwent became so great and so conspicuous, as to give room for suspecting, that the Negro, the Laplander, and the White, were really different species, if, on the one hand, we were not certain, that only one man was originally created, and, on the other, that the White, the Laplander, and the Negro, are capable of uniting, and of propagating the great and undivided family of the human kind. Hence those marks which distinguish men who inhabit different regions of
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the earth, are not original, but purely superficial. It is the same identical being who is varnished with black under the Torrid Zone, and tawned and contracted by extreme cold under the Polar Circle. This circumstance is alone sufficient to demonstrate, that the nature of man is endowed with greater strength, extension, and flexibility, than that of any other terrestrial being; for vegetables, and almost all the animals, are confined to particular soils and climates. This extension of our nature depends more on the qualities of the mind than those of the body. It is by the mind that man has been enabled to find those resources which the delicacy of his body required, to brave the inclemency of the sky, and to conquer the rigidity and barrenness of the earth. He may be said to have subdued the elements: By an exertion of his intellect, he produced the element of fire, which had no existence on the surface of the earth. His sagacity taught him how to clothe his body, and to build houses for defending himself against every external attack. By the powers of genius he supplied all the qualities which are wanting in matter. Without possessing the strength, the magnitude, or the robustness of most animals, he knew how to conquer, to tame, and to confine them: He made himself master of those regions which Nature seemed to have resigned to them as an exclusive possession.

The earth is divided into two great Continents. The antiquity of this division exceeds that of all human monuments; and yet man is more antient; for he is the same in both worlds. The Asiatic, the European, and the Negro, produce equally with the American. Nothing can be a stronger proof that they belong to the same family, than the facility with which they unite to the common stock. The blood is different; but the germ is the same. The skin, the hair, the features, and the stature, have varied, without any change in the internal structure. The type is general and common: And if, by any great revolution, man were forced to abandon those climates which he had invaded, and to return to his native country, he would, in the progress of time, resume his original features, his primitive stature, and his natural colour. But the mixture of races would produce this effect much sooner. A white male with a black female, or a black male with a white female, equally produce a mulatto, whose colour is brown, or a mixture of black and white. This mulatto intermixing with a white, produces a second mulatto less brown than the former; and, if the second mulatto unites with a white, the third will have only a slight shade of brown, which will entirely vanish in future generations. Hence, by this mixture, 150, or 200 years, are sufficient to bleach the skin of a Negro. But, to produce the same effect by the influence of climate alone,

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many centuries would perhaps be necessary. Since the Negroes were transported to America, which is about two hundred years ago, the Negro families, who have preserved themselves from mixture, seem not to have lost any shade of their original colour. The climate of South America, it is true, being sufficiently hot to tawn its inhabitants, we ought not to be surprised that the Negroes there continue black. To put the change of colour in the human species to the test of experiment, some Negroes should be transported from Senegal to Denmark, where the inhabitants have generally white skins, golden locks, and blue eyes, and where the difference of blood and opposition of colour are greatest. These Negroes must be confined to their own females, and all crossing of the breed scrupulously prevented. This is the only method of discovering the time necessary to change a Negro into a White, or a White into a Black, by the mere operation of climate.

This is the greatest alteration that climate has produced in man, and yet it is only superficial. The colour of the skin, hair, and eyes, varies by the influence of climate alone. The other changes, such as those of stature, figure, features, and quality of the hair, seem to require the joint operations of climate and other causes; for, in the Negro race, who have generally crisped wool instead of hair, a flat nose, and thick lips, there are whole nations with long hair and regular features :

features: And, in the race of Whites, if we compare the Dane to the Calmuck Tartar, or even the Finlander to the Laplander, whose nations are contiguous, we shall find among them as great a difference in features and size as takes place among the Negroes. To produce such alterations, therefore, which are deeper than the former, some other causes must concur with the influence of climate. The most direct and general cause is the quality of the food. It is chiefly by aliment that man receives the influence of the soil which he inhabits: That of the air and climate acts more superficially. While the climate changes the colour of the skin, food acts upon the internal form by its qualities, which are always related to those of the earth by which it is produced. Even in the same country, we see striking differences between those who occupy the heights and those who inhabit the low grounds. The inhabitants of the mountains are always better made, more vivacious, and more beautiful than those of the vallies. Hence, in countries remote from the original climate, where the herbs, fruits, grains, and the flesh of animals differ both in quality and substance, the men who feed upon these articles must undergo still greater changes. These impressions are not suddenly made. A considerable time is necessary before man receives the tinge peculiar to the climate, and still more before the soil communicates to him its qualities. It requires

quires ages, joined to the constant use of the same food, to change the features, the size of the body, and the substance of the hair, and to produce those internal alterations which, when perpetuated by generation, become general and permanent characteristics which distinguish the different races and nations who compose the aggregate of the human species.

In brute animals, these effects are greater and more suddenly accomplished; because they are more nearly allied to the earth than man; because their food being more uniformly the same, and nowise prepared, its qualities are more decided, and its influence stronger; and because the animals, being unable to clothe themselves, or to use the element of fire, remain perpetually exposed to the action of the air, and all the inclemencies of the climate. For this reason, each of them, according to its nature, has chosen its zone and its country: For the same reason, they remain there, and, instead of dispersing themselves, like man, they generally continue in those places which are most friendly to their constitutions. And, when forced by men, or by any revolution on the globe, to abandon their native soil, their nature has undergone changes so great, that, to recognise them, recourse must be had to accurate examination, and even to experiment and analogy. If to these natural causes of alteration in free animals, we add that of the empire of man over those which he has reduced to slavery,

slavery, we will be astonished at the degree to which tyranny can degrade and disfigure Nature ; we will perceive the marks of slavery, and the prints of her chains ; and we will find, that these wounds are deeper and more incurable, in proportion to their antiquity ; and that, in the present condition of domestic animals, it is perhaps impossible to restore their primitive form, and those attributes of nature which we have taken from them.

Thus the temperature of the climate, the quality of the food, and the evils produced by slavery, are the three causes of the changes and degeneration of animals. The effects of each merit a separate examination ; and their relations, when viewed in detail, will exhibit a picture of Nature in her present condition, and of what she was before her degradation.

Let us compare our pitiful sheep with the mouflon from whom they derived their origin. The mouflon is a large animal. He is fleet as a stag, armed with horns and thick hoofs, covered with coarse hair, and dreads neither the inclemency of the sky, nor the voracity of the wolf. He not only escapes from his enemies by the swiftness of his course, but he resists them by the strength of his body, and the solidity of the arms with which his head and feet are fortified. How different from our sheep, who subsist with difficulty in flocks, who are unable to defend themselves by their numbers, who cannot

not endure the cold of our winters without shelter; and who would all perish, if man withdrew his protection? In the warmest climates of Asia and Africa, the mouflon, who is the common parent of all the races of this species, appears to be less degenerated than in any other region. Though reduced to a domestic state, he has preserved his stature and his hair; but the size of his horns are diminished. Of all domestic sheep, those of Senegal and India are the largest, and their nature has suffered least degradation. The sheep of Barbary, Egypt, Arabia, Persia, Kalmuck, &c. have undergone greater changes. In relation to man, they are improved in some articles, and vitiated in others. But, with regard to Nature, improvement and degeneration are the same thing; for they both imply an alteration of original constitution. Their coarse hair is changed into fine wool. Their tail, loaded with a mass of fat, has acquired a magnitude so incommodious, that the animals trail it with pain. While swollen with superfluous matter, and adorned with a beautiful fleece, their strength, agility, magnitude, and arms, are diminished: These long-tailed sheep are only half the size of the mouflon. They can neither fly from danger, nor resist the enemy. To preserve and multiply the species, they require the constant care and support of man.

The degeneration of the original species is still greater in our climates. Of all the qualities

ties of the mouflon, our ewes and rams have retained nothing but a small portion of vivacity, which yields to the crook of the shepherd. Timidity, weakness, resignation, and stupidity, are the only melancholy remains of their degraded nature. To restore their original size and strength, our Flanders sheep should be united with the mouflon, and prevented from propagating with inferior races; and, if we would devote the species to the more useful purposes of affording us good mutton and wool, we should imitate some neighbouring nations in propagating the Barbary race of sheep, which, after being transported into Spain, and even into Britain, have succeeded very well. Strength and magnitude are male attributes; plumpness and beauty of skin are female qualities. To obtain fine wool, therefore, our rams should have Barbary ewes; and, to augment the size, our ewes should be served with the male mouflon.

Our goats might be managed in the same manner. By intermixing them with the goat of Angora, their hair might be changed, and rendered equally useful with the finest wool. In our climate, the species of the goat is not so much degenerated as that of the sheep. It appears to be still more degenerated in the warm countries of Africa and India. The smallest and weakest goats are those of Guinea, Juda, &c. and yet

yet these countries produce the largest and strongest sheep.

The species of the ox is more influenced by nourishment than that of any other domestic animal. In countries where the pasture is rich and always springing, they acquire a prodigious size. The antients gave to the oxen of *Æthiopia*, and some other provinces of *Asia*, the appellation of *Elephant-bulls*; because, in these countries, they approach to the magnitude of elephants. This effect is produced by the abundance of rich and succulent herbage. Of this our own climate affords a proof. An ox fed on the tops of the green mountains of *Savoy* or *Switzerland*, acquire double the size of our oxen; and yet the oxen in *Switzerland*, like ours, are fed in stables during the greatest part of the year. The difference arises from this circumstance, that the *Switzerland* oxen are set out to free pasture as soon as the snow melts, while ours are not permitted to enter the meadows till the hay, which is reserved for the horses, is carried off; and, of course, they are neither fully nor properly nourished. It would be extremely useful to the state, if a regulation were made for abolishing promiscuous pasturage, and permitting inclosures. The climate has likewise considerable influence on the nature of the ox. In the northern regions of both Continents, he is covered with long, soft hair, like fine wool. He has also a large bunch on his shoulders; and this defor-

mity is common to the oxen of Asia, Africa, and America. Those of Europe alone have no bunch. The European oxen, however, are the primitive race, to which the bunched kind ascend, by intermixture, in the first or second generation. What proves this race to be only a variety of the other, is, that it is subject to very great degradations. The differences in their size is enormous. The small zebu of Arabia is not one tenth part of the magnitude of the *Æthiopian bull-elephant*.

In general, the influence of food is greater, and produces more sensible effects upon those animals which feed on herbs or fruits. Carnivorous animals, on the contrary, are less affected by this cause than by the influence of climates; because flesh is an aliment already assimilated to the nature of the animal that devours it. But grass is the first product of the earth, and has all the properties of it; and these terrestrial qualities are immediately communicated to the animal.

Thus the dog species, upon which food seems to have a very slight influence, is more varied than that of any other carnivorous animal. In his degradations, he appears to follow exactly the differences of climate. He is naked in the warmest climates, covered with a coarse thick hair in the northern regions, and adorned with a fine silky robe in Spain and in Syria, where the mild temperature of the air converts the hair

of most animals into a kind of silk. But, independent of these external varieties, which are produced by the influence of climate alone, the dog is subjected to other changes that proceed from his situation, his captivity, or from the nature of the intercourse he holds with man. The augmentation and diminution of his size, are effects of the attention bestowed in uniting the largest or smallest individuals. The shortening of the tail, muzzle, and ears, proceeds likewise from the hand of man. Dogs who, for a few generations, have had their ears and tail cut, transmit these defects, in a certain proportion, to their descendents. I have seen dogs produced without tails, which I at first apprehended to be individual monsters: But I have since learned that this race exists, and is perpetuated by generation. Pendulous ears, the most general and most certain mark of domestic servitude, are common to almost all dogs. Of thirty different races, which compose the species, only two or three have preserved their primitive ears. The shepherd's dog, the wolf-dog, and the dog of the North, alone, have erect ears. The voice of these animals has likewise undergone strange alterations. The dog seems to have become clamorous and noisy in the society of man, who employs his tongue more than any other being; for the dog, in a state of nature, is almost mute, uttering only a kind of howling when pressed with hunger. He acquired his
faculty

faculty of barking by his commerce with men in polished society; for, when transported to extreme climates, and among a gross people, such as the Laplanders or Negroes, he loses his barking, assumes his natural howling, and becomes almost perfectly mute. The dogs with erect ears, and particularly the shepherd's dog, which is least degenerated, makes also the least use of his voice. As he passes a solitary life in the country, and has no intercourse but with sheep and a few simple men, like them, he is serious and silent, though, at the same time, very active and intelligent. Of all dogs, he has fewest acquired talents, and possesses a greater number of those which are natural. He is likewise the most useful for guarding our flocks, and for the preservation of good order. His race ought, therefore, to be more multiplied than those of other dogs, who minister only to our amusements, and whose numbers are so great, that, in every town and village, the provisions consumed by them would nourish many families.

The domestic state has greatly contributed to vary the colour of animals, which, in general, was originally brown or black. The dog, the ox, the goat, the sheep, the horse, have assumed all kinds of colours. The hog has changed from black to white; and pure white, without any spots, seems to mark the last degree of degeneration, and it is generally accompanied with essential

ferential imperfections. In the race of white men, those who are remarkably white, and whose hair, eye-brows, beard, &c. are likewise white, have often a defect in their hearing, and, at the same time, red and weak eyes. In the black race, the white Negroes are still more feeble and defective. All the quadrupeds which are absolutely white, have the same faults of dullness of hearing and red eyes. This kind of degeneration, though more frequent among domestic animals, sometimes appears among the wild species, as in those of the elephant, stags, fallow-deer, monkeys, moles, and mice; in all of which this colour is uniformly accompanied with smaller or greater degrees of bodily weakness, and bluntness of the senses.

But slavery seems to have made the deepest and most conspicuous impressions on the camel. He is brought forth with bunches on his back, and callosities on his breast and knees. These callosities are evidently wounds occasioned by friction; for they are filled with pus and corrupted blood. As he never walks but under a heavy load, the pressure of which prevents the uniform extension and growth of the muscles of the back, and produces a swelling in the parts adjacent, in the same manner, when he lies down or sleeps, he is at first obliged to rest upon his folded limbs. This posture becomes at last habitual. For several hours every day, the whole weight of his body is supported

supported by his breast and knees. The skin of those parts is rubbed off by pressing against the earth, and they soon become callous, and lose their organization. The lama, which, like the camel, passes his life under a burden, and also reposes on his breast, has similar callosities, which are perpetuated by generation. The baboons and monkeys, whose general posture, whether asleep or awake, is sitting, have callosities on their buttocks. This callous skin even adheres to the bones against which it is continually pressed by the weight of the body. But these callosities of the baboons and monkeys are dry and heal; because they proceed not from restraint, nor from the weight of any foreign load. They are, on the contrary, effects of a natural habit; for those animals continue longer in a sitting than in any other posture. These callosities of the monkeys are similar to the double skin on the sole of a man's foot. This sole is a natural callosity, which our constant habit of walking or standing renders more or less thick, according to the quantity of exercise we take.

The wild animals, not being under the immediate dominion of man, are not subject to such great changes as the domestic kinds. Their nature seems to vary with different climates; but it is no where degraded: If they were capable of choosing their climate and their food, the changes they undergo would be still less.

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But, as they have at all times been hunted and banished by man, or even by the strongest and most ferocious quadrupeds, most of them have been obliged to abandon their native country, and to occupy lands less friendly to their constitution. Those whose nature had flexibility enough to accommodate themselves to this new situation, have diffused over vast territories; while others have had no other resource than to confine themselves in the deserts adjacent to their own country. There is no animal which, like man, has spread over the whole surface of the earth. A great number of species are limited to the southern regions of the Old, and others to the same regions of the New Continent. Others, though fewer, are confined to the northern regions, and, instead of extending to the south, have passed from the one Continent to the other, by routes which are still undiscovered. Other species inhabit only particular mountains or vallies. And, the changes in their nature are, in general, less sensible, the more they are confined to a small circle.

As climate and food have little influence on wild animals, and the empire of man still less, the chief varieties amongst them proceed from another cause. They depend on the number of individuals of those which produce, as well as of those that are produced. In those species in which the male attaches himself to one female, as in that of the roebuck, the young demonstrate

monstrate the fidelity of their parents by their entire resemblance to them. In those, on the contrary, the females of which often change the male, as in that of the stag, the varieties are numerous: And as, through the whole extent of Nature, there is not one individual perfectly similar to another, the varieties among animals are proportioned to the number and frequency of their produce. In species, the females of which bring forth five or six young, three or four times a year, the number of varieties must be much greater than in those which produce but a single young once a year. The small animals, accordingly, which produce oftener and in greater numbers than the larger kinds, are subject to greater varieties. Magnitude of body, which appears to be only a relative quality, possesses positive rights in the laws of Nature. Magnitude is as fixed as minuteness is changeable. Of this fact we shall soon be convinced by the following enumeration of the varieties which take place in the large and small animals.

In Guinea, the ears of the wild boar are very long, and lie on his back. In China, his belly is large and pendulous, and his legs are very short. At Cape Verd, and in other places, his tusks are very thick, and bended like the horns of an ox. In a domestic state, and in cold or temperate climates, his ears are half pendulous, and his bristles are white. I reckon neither

the pecari, nor the babiloussa among the varieties of the wild boar; because they belong not to this species, though they approach nearer to it than to any other.

In warm, dry, and mountainous countries, such as Corsica and Sardinia, the stag has lost one half of his size, his hair has become brown, and his horns blackish. In cold and moist countries, such as Bohemia and the Ardennes, his size is increased, his coat and horns are almost black, and his hair is so long that it forms a kind of beard on his chin. In North America, the horns of the stag are extended, and branched with crooked antlers. In a domestic state, his coat changes from yellow to white; and, unless when at liberty, or in very large inclosures, his limbs are deformed and crooked. The axis is not to be reckoned among the varieties of the stag: It approaches nearer to that of the fallow-deer, of which, perhaps, it is only a variety.

In the fallow-deer, it is difficult to ascertain the original species. He is no where entirely domestic nor absolutely wild. He varies indifferently from yellow to pied, and from pied to white. His horns and tail are also larger and longer, in different races, and his flesh is good or bad, according to the soil and climate. Like the stag, he is found in both Continents; and he seems to be larger in Virginia, and other temperate provinces of America, than in Eu-

rope. The roebuck is likewise larger in the New than in the Old Continent. But, in other respects, all his variations are confined to some differences in the colour of the hair, which changes from yellow to brown. The smallest roebucks are generally brown, and the largest yellow. The roebuck and fallow-deer are the only animals common to both Continents which are larger and stronger in the New than in the Old World.

The ass, though subjected to the pressure of the most wretched servitude, has undergone few changes; for his nature is so obdurate, that it equally resists bad treatment and the inconveniencies of a foreign climate and of coarse food. Though originally a native of warm countries, he can exist and even multiply, without the assistance of man, in temperate climates. Formerly there were onagers, or wild asses, in all the deserts of Asia Minor; but they are now rare, and are numerous in the deserts of Tartary only. The mule of Dauria*, called *czigithai* by the Tartars, is probably the same animal with the onager of the other Asiatic provinces. The former differs from the latter only in the length and colour of the hair, which, according to Mr Bell, is undulated with brown and white †.

These

* *Mulus Dauricus foecundus*, *Czigithai* Mongolorum in Dauria; *Mus. Petropolitanum*, p. 335.

† In the forests near Kuznetsky on the river Tom, one of the

These *czigithais* are found in the forests of Tартary as far as the 51st and 52d degree of latitude. They must not be confounded with the zebra, whose colours are more vivid, and differently disposed. Besides, the zebra constitutes a particular species, as different from the ass as from the horse. In the domestic ass, the skin has become softer, and lost those small tubercles which are dispersed over that of the onagers, and of which the inhabitants of the Levant make the leather called *chagrin*.

The nature of the hare is both flexible and firm; for, though it is diffused over almost every climate of the Old Continent, yet it continues nearly the same. In very cold climates, its hair whitens during the winter, and, in summer, resumes its natural colour, which varies only from yellow to red. The quality of the flesh likewise changes. The flesh of the reddish hares is always the best. But the rabbit, though not of so flexible a nature as the hare, being less diffused, and even confined to certain countries, is subject to more variations; because the hare is every

the sources of the river Oby, in lat. 51 and 52, are wild asses. I have seen many of their skins; they have in all respects the shape of the head, tail, and hoofs of the common ass; but their skin is waved and undulated white and brown; *Bell's travels to China.* *Nota.* The skins which Mr Bell saw might be those of the zebra; for other travellers alledge not that the *czigithais* or *onagers* of Dauria are striped, like the zebra, with brown and white. Besides, in the Petersburg cabinet, there are skins both of the zebra and of the *czigithai*, which are equally shown to strangers.

every where wild, while the rabbit is almost every where half-domestic. The colour of the burrowed rabbits varies from yellow to gray, white, and black. They likewise vary in size, and in the quantity and quality of the hair. This animal, which is originally a native of Spain, has acquired a long tail in Tartary, and bushy hair, like felt, in Syria, &c. In cold countries, black hares are sometimes found. It is likewise alledged, that, in Norway, and some other northern regions, there are hares with horns. M. Klein has given figures of two of these horned hares *. From inspection of these figures, it is easy to perceive, that the horns are similar to the *wood*, or horns, of the roebuck. This variety, if it exists, is only individual, and probably appears in such places alone where the hare cannot find herbage, and is obliged to feed upon woody substances, as the bark, buds, and leaves of trees, &c.

The elk, whose species is confined to the northern regions of both Continents, is only smaller in America than in Europe; and we see, from the enormous horns found under the ground in Canada, Russia, Siberia, &c. that these animals were formerly much larger than they are at present. This difference of size was perhaps owing to the perfect tranquillity they enjoyed in their forests; and, as man had not yet penetrated into these climates, they had it in their

* Klein de quad. p. 52. tab. 3. fig. ad § 21.

their power to choose their abode in those places where the air, the soil, and the water, were most agreeable to them. The rain-deer, which the Laplanders have rendered domestic, is, for this reason, more changed than the elk, which has never been reduced to slavery. The wild rain-deer are larger and stronger, and have blacker hair than the domestic kind. The latter have varied in the colour of the hair, and likewise in the size of the horns. The rain-deer liverwort, which constitutes the chief food of these animals, seems to contribute greatly, by its nutritive quality, to the growth of the horns, which are proportionally larger in the rain-deer than in any other species. It is, perhaps, the same aliment which, in this climate, produces horns in the head of the hare, as well as in that of the female rain-deer; for, in all other climates, there are no horned hares, nor any animal of which the female carries horns as well as the male.

The elephant is the only quadruped upon whom the domestic state has no influence; because, in this state, he refuses to propagate, and, of course, transmits not to his species the wounds or defects occasioned by his unnatural condition. In the elephant, there are only slight, and almost individual varieties. His natural colour is black; some of them, however, are red, and others white; but their number is exceedingly small. The elephant likewise varies in size, according to the longitude, or rather the latitude

tude of the climate. Under the Torrid Zone, to which he is entirely confined, he rises to fifteen feet high in the eastern parts of Africa; while, in the western regions of the same country, he attains not above ten or eleven feet; which is a proof that, though great heat be necessary to the full developement of his body, excessive heat restrains and reduces it to smaller dimensions. The magnitude of the rhinoceros is more uniform; and he seems to differ from himself only by that singular character which distinguishes him from all other animals, namely, the large horn on his nose. This horn is single in the Asiatic rhinoceros, and double in the African.

I decline mentioning the varieties which happen in every species of carnivorous animals; because they are extremely slight; and, of all quadrupeds, those which feed upon flesh are most independent of man; and, by means of this nourishment, already concocted by Nature, they receive almost none of the qualities of the soil which they inhabit. Besides, being all endowed with strength and weapons, they have the choice of soil and climate in their own option; and, consequently, the three causes of change or degeneration, formerly assigned, must have very little effect upon them.

After this slight survey of the variations peculiar to each species, let us next attend to the more important change of the species themselves. This is the most antient degeneration; and it seems

seems to have taken place in each family, or in each genus, under which the contiguous species may be comprehended. Of all terrestrial animals, there are only some detached species, which, like that of man, constitute, at the same time, both genus and species. The elephant, the rhinoceros, the hippopotamus, and the giraffe, form genera, or simple species, which propagate in a direct line only, and have no collateral branches. All the others appear to constitute families, in which a principal and common trunk is generally to be recognised, and from which different branches arise, whose numbers are proportioned to the barrenness or fertility of the individuals in each species.

Under this point of view, the horse, the zebra, and the ass, are all of the same family. If the horse is the principal trunk, the zebra and the ass are collateral branches. The number of their resemblances being infinitely greater than that of their differences, they may be regarded as constituting but one genus, of which the chief characters are apparent, and common to the whole three. They alone are whole-hoofed, without any appearance of toes or claws. Though they form three distinct species, they are not absolutely separated, since the jack-ass produces with the mare, and the horse with the she-ass; and it is probable, that, if the zebra were tamed, he would likewise produce with the mare and ass.

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The mule, which has always been considered as a vitiated production, as a monster composed of two natures, and for that reason has been thought to be incapable of reproduction, is not, however, so deeply injured as has been blindly imagined; for it is not absolutely barren, and its sterility depends on certain external and peculiar circumstances. Mules, it is well known, frequently produce in warm countries; and there are some examples of their producing even in our temperate climates. But we know not whether this generation ever proceeds from the simple union of a male and female mule, or of a mule with a mare, or of a jack-ass with a mule. There are two kinds of mules; the common large mule which proceeds from the junction of a jack-ass with a mare, and the small mule, proceeding from the horse and the she-ass, which we shall distinguish by the name of *bardeau*. Both kinds were known to the ancients: The first they denominated *mulus*, and the second *ginnus*, *hinnus*, *burdo*. They assure us, that the *mulus* * produced with the mare an animal likewise called *ginnus*, or *hinnus* †; that the she-

* *Mulus equa conjunctus mulum procreavit. . . . Mula quoque jam facta gravida est, sed non quoad perficeret atque ederet prolem; Arist. hist. anim. lib. 6. cap. 24.*—Est in analibus nostris mulas peperisse saepe; verum prodigii loci habitum; *Plin. hist. nat. lib. 8. cap. 44.*

† The word *ginnus* is used by Aristotle in two senses: In the first, it denotes any imperfect animal, an abortion, a dwarf-mule,

The mule easily conceived, but seldom brought the foetus to maturity; and that, though examples of mules bringing forth were pretty frequent, yet such productions were always regarded as prodigies. But is not a prodigy in Nature only an effect more rare than some others? Thus we see that, in certain circumstances, the mule can generate, and the she-mule conceive and bring forth. Hence nothing but experiments are wanting to discover these circumstances, and to acquire new facts concerning generation by the commixture of species, and, of course, concerning the unity or diversity of each genus. To succeed in these experiments, the he-mule must be joined with a she-mule, with a mare, and with a she-ass: The same process must be observed with regard to the bardeau; and the results of these six copulations ought to be carefully marked. The female ass, mule, and bardeau, should likewise be served with a horse. These experiments, though simple, have never been tried with a view to explain the nature of generation. I regret that it has never been in my power to execute them; but I shall hazard the following conjectures on what would probably be their results. I imagine, for example, that, of all these junctions, that of the he-mule and female bardeau, and

VOL. VII.

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that

mule, proceeding sometimes from the horse and she-ass: In the second, it signifies the particular produce of the mule and mare.

that of the male bardeau and she-mule, would be absolutely abortive; that the junction of the he and she mule, and that of the male and female bardeau, might perhaps succeed, though rarely; that the he-mule would produce more certainly with the mare than with the she-ass, and the mule bardeau more certainly with the she-ass than with the mare; and, in fine, that the horse and jack-ass might perhaps produce with both the she-mules, but that the ass would be more successful than the horse. These trials should be made in a country as warm, at least, as the south of France; and the mules should be seven, the horses five, and the asses four years old; because these different periods are necessary before the three animals acquire their full vigour.

I now give the analogical reasoning upon which these conjectures are founded. In the common order of nature, it is not the males, but the females, which constitute the unity of species. We know, from the example of the sheep, which can admit two different males, and be equally fertile with the ram or the he-goat, that the female has much more influence upon the specific qualities of the produce than the male; since, from these two different males, lambs only, or individuals specifically the same with the mother, are propagated. Thus the mule has a greater resemblance to the mare than to the ass, and the bardeau to the she-ass than

to the horse. Hence *the mule ought to produce more certainly with the mare than with the she-ass, and the bardeda more certainly with the she-ass than with the mare.* In the same manner, the horse and jack-ass *would probably produce with both the she-mules*; because, being females, though vitiated, each retains more specific qualities than the male mules: *But the jack-ass should produce with them more certainly than the horse*; because the jack-ass has been observed to possess stronger prolific powers, even when joined with a mare, than the horse; for the former corrupts or destroys what had been done by the latter. Of this fact we may be assured by first serving mares with a stallion, and next day, or even some days after, with a jack-ass. Mares managed in this manner almost constantly produce mules, and not horses. This fact, every circumstance of which merits attention, seems to indicate that the ass, and not the horse, is the principal stock of this family; since the prolific powers of the ass prevail even with mares, especially as the reverse does not take place when the ass precedes the horse. The latter destroys not the generation of the ass; for the produce is almost always a mule. On the other hand, the same thing does not take place, when the jack-ass precedes the horse with a she-ass; for the latter destroys not the operation of the former. With regard to the copulation of mules among themselves, I have presumed it to be sterile;

rile ; because, from two temperaments, already vitiated in the article of generation, and which, from their union, must be still farther injured, a produce either totally vitiated, or absolute barrenness, is to be expected.

By the mixture of the mule with the mare, of the bardeau with the she-ass, and of the horse and jack-ass with she-mules, individuals might be obtained which would ascend toward the original species, and would be only half mules. These, like their parents, would not only possess the power of engendering with those of their primitive species, but perhaps of producing among themselves ; because, being only half vitiated, their produce would not be more vitiated than the first mules : And, if these half mules were still barren, or their offspring rare, it is almost certain, that, by making them approach another degree toward their original species, the individuals which, resulting from their union, being only vitiated one fourth, would produce among themselves, and form a new stem, which would neither be precisely that of the horse, nor that of the ass. Now, as every thing that can happen has been accomplished in time, and either exists or has existed in Nature, I am inclined to think, that the fertile mule mentioned by the antients, and which, in the days of Aristotle, existed in the territories of Syria, above Phoenicia, might be a race of these half or quarter mules, which had been produced by the
commixtures

commixtures we have just now described; for Aristotle says in express terms, that these fertile mules were perfectly similar to the barren kind*. He clearly distinguishes them from the *onagri*, or wild asses, which he mentions in the same chapter; and, consequently, those animals can only be referred to the mules which have suffered little variation, and preserved their generative powers. The *czigutbai*, or fertile mule of Tartary, it is probable, was not the onager or wild ass, but this same Phoenician mule, whose race, perhaps, still remains. The first traveller who compares them, will confirm or destroy this conjecture. Even the zebra, which has a greater resemblance to the horse than to the ass, might have a similar origin. The constrained regularity of his colours, which are disposed in alternate bands of black and white, seems to indicate that they proceed from two different species, which, in their mixture, have separated as much as possible; for none of the operations of Nature is so abrupt, and so little shaded, as the coat

* In terra Syria super Phoenicem mulae et coeunt et pariunt; sed id genus diversum quanquam simile; *Arist. hist. anim. lib. 6. cap. 24.*—Sunt in Syria quos mulos appellant genus diversum ab eo quod coitu equae et asini procreatur: Sed simile facie, quomodo asini sylvestres similitudine quadam nomen urbanorum accepere; et quidem ut asini illi feri sic muli praestant celeritate. Procreant ejusmodi mulae suo in genere. Cujus rei argumento illae sunt quae tempore Pharnacae patris Pharnazabim in terram Phrygiam venerunt, quae adhuc extant. Tres tamen ex novem quos numero olim fuisse aiunt, servantur hoc tempore; *Idem, cap. 36.*

coat of the zebra, where she passes quickly and alternately from white to black, and from black to white, without any intermediate step, through the whole extent of the animal's body.

However this matter stands, it is certain, from what is above remarked, that mules, in general, which have uniformly been accused of sterility, are neither really nor universally barren; and that this sterility is particularly apparent only in the mule which proceeds from the ass and horse; for the mule produced by the he-goat and the ewe is equally fertile as its parents; and most of the mules produced by different species of birds are not barren. It is, therefore, in the particular nature of the horse and ass that we must search for the causes of the sterility of the mules which proceed from their union; and, instead of supposing barrenness to be a general and necessary defect common to all mules, it should be limited to the mule produced by the ass and horse; and even this limitation ought to be restricted, as these same mules, in certain circumstances, become fertile, particularly when brought a degree nearer to their original species.

The mules produced by the horse and ass have their organs of generation as complete as other animals. Nothing seems to be defective either in the male or female. The seminal fluid of the male is copious; and, as he is not permitted to copulate, he is often so pressed for a discharge, that he lies down on his belly, in order

order to produce a collision on his fore legs, which are folded under his breast. These animals, therefore, are furnished with every thing necessary to the act of generation. They are even extremely ardent, and, consequently, very indifferent in their choice. The males have nearly the same vehemence of desire for the female mule, the she-ass, and the mare. Hence there is no difficulty of procuring copulations; but, to render these prolific, particular attentions are necessary. Too much ardour, especially in the females, is generally followed with sterility; and the female mule is at least as ardent as the she-ass. Now, we know that the latter rejects the seminal fluid of the male, and that, to make her retain it and conceive, she must have blows, or water thrown on her crupper, in order to calm the convulsive emotions of desire which subsist after copulation, and are the cause of this rejection. The she-ass and female mule, therefore, by their too great ardour, have both a tendency to barrenness. This tendency is increased by another cause: As these animals are originally natives of warm climates, cold is an obstacle to their propagation; and, for this reason, they are only allowed to copulate in summer. When their union is permitted at any other time, and particularly in winter, it seldom produces impregnation. The season necessary to the success of their generation is equally so to the preservation of their young. The colt must
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be brought forth when the season is warm, otherwise it either languishes or dies. And, as the she-ass goes one year with young, she brings forth in the same season that she conceives. This is a sufficient proof that heat is necessary not only to the fecundity of these animals, but to the vigour of their bodies. On account of the great ardour of the female, she is served with a male almost immediately after she brings forth. She is not allowed above seven or eight days of repose between delivery and copulation. Weakened by the birth, she is then less ardent, the parts have not had time sufficient to resume their former tension; and, of course, conception is more certain than when she is in full vigour and ardour. In this species, as in that of the cat, the temperament of the female is said to be much more ardent than that of the male. The jack-ass, however, is remarkable for vigour. He can cover females several times a day successively. He has been known to go to such excess, without any other incitement than natural appetite, as to die on the spot, after eleven or twelve efforts, repeated almost without interval; and, to support this great waste, he took nothing but a few draughts of water. This flame which consumes him is too vivid to be durable: An ass stallion is soon unfit either for propagation or service; and this, perhaps, is the reason why the female has been said to have more strength, and to live longer than the male.

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It is certain, that, with the management formerly recommended, she can live thirty years, and bring forth annually during her whole life. But the male, when not restrained from females, abuses his strength to such a degree, that, in a few years, he loses the power of engendering.

Hence both the male and female asses have a tendency to sterility by common, and likewise by different qualities. The horse and mare have the same tendency. The stallion may be given to the mare nine or ten days after she has brought forth, and she can produce five or six years in succession; but, after that period, she becomes barren. To support her fecundity, she should be allowed an interval of a year between each birth, and treated differently from the she-ass. Instead of giving her the stallion soon after delivery, she should be restrained from him till the following year, and till her ardour is manifested by the fluids she ejects. Even with these precautions, she seldom retains her fertility beyond the age of twenty-five years. On the other hand, the horse, though less ardent and more delicate than the jack-ass, preserves the faculty of propagating much longer. I have known old horses, who were unable to mount the mare without the aid of the groom, resume their vigour when properly placed, and engender at the age of thirty years. In the horse, the seminal fluid is not only less abundant, but less stimulant than in the jack-ass; for the horse often co-

pulates without ejection, especially when the mare is presented to him before he discovers any inclination. After enjoyment, he appears to be melancholy ; and a considerable interval is necessary for resuming his ardour. Besides, his most vigorous efforts are not always successful. Some mares are naturally barren, and a greater number of them possess very little fertility. There are likewise stallions, which, though apparently vigorous, have very little power. To these particular reasons, we can add a more evident and a more general proof of the small degree of fertility in the horse and ass : Of all domestic animals, though most attention is bestowed on them, they are the least numerous. In the ox, the sheep, the goat, and particularly the hog, the dog, and the cat, the individuals are ten, and perhaps a hundred times more numerous than those of the horse and ass. Thus their defectiveness in fecundity is proved by the facts ; and to all these causes, the sterility of mules, which are produced by the union of those naturally unprolific species, ought to be ascribed. In those species, on the contrary, which, like the sheep and goat, are numerous, and consequently prolific, the mules proceeding from their intermixture are not barren, but ascend to the original species in the first generation. But it would require two, three, and perhaps four generations, to enable the mule produced by the union of
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the horse and ass to arrive at the same degree of re-establishment of its nature.

Another kind of mule has been said to have resulted from the copulation of the bull and mare. Columella, I believe, is the first who mentions it. Gesner quotes him, and adds, that these mules are found near Grenoble, and are called, in French, *jumars*. I had one of these jumars brought to me from Dauphiny, and another from the Pyrenees; and I discovered, both from inspecting their external figure, and dissecting their internal parts, that these jumars were nothing but bardeaus, or mules produced between the horse and she-ass. Hence I am led to conclude, both from this experiment, and from analogy, that this kind of mule has no existence, and that the word *jumar* is a chimerical name, without any real object. The nature of the bull is too remote from that of the mare to permit their producing together; the one having four stomachs, horns, cloven feet, &c. and the other being whole hoofed, hornless, and having but one stomach. The organs of generation are likewise so very different, both in size and proportions, that there is no reason for supposing that they could unite either with pleasure or success. If the bull were to produce with any other species than his own, it would be with the buffalo, which resembles him in structure as well as in natural habits; yet we have never heard of mules produced by these

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two animals, though they are often found in the same places, either in a domestic or a free state. What is related concerning the fertile intercourse of the stag and cow, appears to be equally suspicious as the history of the jumars, though the stag, by his conformation, is not so far removed from the nature of the cow as the bull is from that of the mare.

The deer-kind, who have *wood* instead of horns, and though they chew the cud, and have the same internal structure with those animals who have horns, seem to constitute a separate family, of which the elk is the largest stem, and the rain-deer, the stag, the axis, the fallow-deer, and the roebuck, are smaller and collateral branches; for there are only six species of quadrupeds, whose head is armed with branched horns, which fall off and are renewed every year: Independent of this generic character, which is common to the whole, they resemble each other still more in structure and natural habits. We should, therefore, rather expect mules from a commixture of the stag or fallow-deer with the axis or rain-deer, than from that of the stag with the cow.

We have still greater reason to regard all the sheep and all the goats as constituting the same family; because they produce together mules, which ascend directly, and in the first generation, to the species of the sheep. To this numerous family of sheep and goats, we might add those

those of the gazelles and bubalus, which are not less numerous. In this genus, which comprehends more than thirty species, it appears that the mouflon, the wild goat, the chamois goat, the antelope, the bubalus, the condema, &c. are principal stems, and that the others are only accessory branches, who have all retained the chief characters of the stems from which they issued; but, at the same time, they have been prodigiously varied by the influences of climate, food, and a state of servitude, to which man has reduced most of these animals.

The dog, the wolf, the fox, the jackal, and the isatis, form another genus, the different species of which are so similar, particularly in their internal structure and the organs of generation, that it is difficult to conceive why they do not intermix. From the experiments I made, with regard to the union of the dog with the wolf and fox, the repugnance to copulation seemed to proceed rather from the wolf than the dog, that is, from the wild, and not from the domestic animal; for the bitches which I put to the trial would have willingly permitted the fox and wolf; but the she-wolf and female fox would never suffer the approaches of the dog. The domestic state seems to render animals less faithful to their species. It likewise makes them more ardent and more fertile: The bitch generally produces twice in a year: But the she-wolf and the female fox produce only once in
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the same period : And, it is probable, that the dogs who have become wild and have multiplied in the island of Juan Fernandez, and in the mountains of St Domingo, produce but once a year, like the fox and wolf. Were this fact ascertained, it would fully establish the unity of genus in these three animals, who resemble each other so much in structure, that their repugnance to intermixing must be solely ascribed to some external circumstances.

The dog seems to be an intermediate species between the fox and wolf. The antients affirm, that, in certain circumstances, and in particular countries, the dog produces with the wolf and fox †. I endeavoured to ascertain this fact; and, though I did not succeed, we must not conclude it to be impossible; for my experiments were confined to captive animals; and it is well known, that, in some species, captivity alone is sufficient to extinguish the desire, and to create a repugnance to copulation, even with their equals. This state of restraint, therefore, ought to have a still greater effect in preventing their union with individuals of a different species.

† In Cyrenensi agro lupi cum canibus coeunt, et Laconici canes ex vulpe et cane generantur; *Arist. hist. anim. lib. 8. cap. 28.* . . . Coeunt animalia generis ejusdem secundum naturam, sed ea etiam quorum genus diversum quidem, sed natura non multum distat; si modo par magnitudo sit et tempora aequent graviditatis, raro id fit, sed tamen id fieri et in canibus et in vulpibus, et in lupis, certum est; *Idem, de generat. anim. lib. 2. cap. 5.*

cies. But I am persuaded, that the dog, when at liberty and deprived of his own female, might intermix with the wolf and fox, especially after he had become wild, lost the odour of a domestic state, and approached these animals in their natural manner and habits. I believe not, however, that the fox and wolf ever unite; since they both live in the same climates, without attempting to intermix. If ever, therefore, they belonged to the same species, their degeneration must be referred to a period beyond the records of history. This is the reason why I asserted, that the dog was an intermediate species between the fox and wolf: His species is also common, since he is capable of uniting with both. And, if any circumstance could show that these three animals proceeded originally from the same stock, it is the common relation between the dog and the fox and wolf, which brings the species nearer each other than all the similarities in their figure and organization. To reduce the fox and wolf, therefore, to one species, we must ascend to a state of nature in a very remote period of antiquity. But, in their actual condition, the wolf and fox must be regarded as the chief stems in the genus of the five animals under consideration. The dog, the jackal, and the isatis, are only lateral branches situated between the two first. The jackal participates of the dog and wolf, and the isatis of the jackal and fox. It likewise appears, from

a great number of authorities, that the jackal and dog easily produce together, and we perceive, from the description and history of the i-satis, that he resembles the fox almost entirely in figure and temperament; that they equally frequent cold countries; but that he, at the same time, has the natural dispositions of the jackal, the continual barking, the clamorous voice, and the habit of going always in packs.

The shepherd's dog, which I consider as the original stem of all dogs, makes, at the same time, the nearest approach to the fox in figure. His size is the same, and, like the fox, he has erect ears, a pointed muzzle, and a straight, trailing tail. He likewise resembles the fox in voice, sagacity, and subtlety of instinct. Hence this dog may have originally proceeded from the fox, if not in a direct, at least in a collateral line. The dog that Aristotle calls *canis laconicus*, and which he assures us is produced from a mixture of the fox and dog, may be the same with the shepherd's dog; or, at least, it has a greater affinity to him than to any other dog. It is natural to imagine, that the epithet *laconicus*, which Aristotle does not explain, was given to this dog, because he was found in Laconia, a province of Greece. But, if we attend to the origin of this *laconic* dog, we will perceive, that the race was not limited to the country of Laconia alone, but must have been equally common in

in all countries inhabited by foxes. This circumstance induces me to think, that Aristotle employed the epithet *laconicus* to express the brevity and acuteness of the animal's voice; because he did not bark like other dogs, but yelped like a fox. Now, our shepherd's dog is best entitled to the denomination of *laconic*; for, of all dogs, his voice is sharpest and most seldom employed. Besides, the characters ascribed by Aristotle to this *laconic* dog correspond very well with those of the shepherd's dog; and this circumstance contributes still farther to convince me that they were the same. That the reader may judge whether my conjecture is properly founded, I have inserted the entire passage of Aristotle in the margin*.

VOL. VII.

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* *Laconici canes ex Vulpē et Canē generantur; Hist. anim. lib. 8. cap. 28.*——Canum genera plura sunt. Coit Laconicum mense suae aetatis octavo, et grus jam circa id tempus attolentes nonnulli urinam reddunt.——Gerunt Laconicae canes uterum parte sexta anni, hoc est, sexagenis diebus, aut uno vel altero plus minusve. Catelli coeci gignuntur, nec ante duodecimum diem visum accipiunt. Coeunt canes posteaquam parerunt sexto mense, nec citius. Sunt quae parte quinta anni uterum ferunt, hoc est, duobus et septuaginta diebus, quorum catelli duodecim diebus luce carent: Nonnullae quarta parte anni, hoc est, tribus mensibus ferunt, quarum catelli diebus decem et septem luce carent. Lac ante diebus quinque, quam pariant, habent canes magna ex parte; verum nonnullis etiam septem aut quatuor diebus anticipat: Utile statim ut pepererint est; genus laconicum post coitum diebus triginta habere lac incipit.——parit canis duodecim complurimum, sed magna ex parte quinque aut sex. Unum etiam aliquam peperisse certum est: Laconicae magna ex parte

The genus of cruel and rapacious animals is one of the most numerous and most diversified.

Evil

parte octo pariunt. Coeunt quandiu vivunt et mares et foeminae. Peculiare generis laconici est ut cum laborant coire melius quam perire possint; vivit in hoc eodem genere mas ad annos decem, foemina ad duodecim: Caeteri canes maxima quidem ex parte ad annos quatuordecim: Sed nonnulli vel ad viginti protrahunt vitam.—Laconici sane generis foeminas, quia minus laborant quam mares, vivaciores maribus sunt: At sero in caeteris, et si non late admodum constat, tamen mares vivaciores sunt; *Idem, lib. 6. cap. 20.*—Foeminam et marem natura distinxit moribus; sunt enim foeminae moribus mollioribus, intereunt celerius, et marum facilius patiuntur. Discunt etiam imitanturque ingeniosius, ut in genere canum laconico foeminas esse sagaciores quam mares apertum est. Moloticum etiam genus venaticum nihilo a caeteris discrepat, at pecuarium longe et magnitudine et fortitudine contra belluas praestat: Insignes vero animo et industria qui ex utroque moloticum dico et laconicum praedierint; *Idem, lib. 9. cap. 1.*

By the word *genus* Aristotle means *race*. He distinguishes three races of dogs, the *Laconicus*, the *Moloticus*, and the *Pecuaricus*. The *Moloticus*, which he likewise calls *Henoticus*, is probably our grey-hound, which in Greece and Asia Minor is the common hunting dog. The *Pecuaricus*, which he says greatly exceeds all other dogs in magnitude, is unquestionably the mastiff, and is used for defending the cattle from ferocious animals. The *Laconicus*, to which he assigns no employment, and only remarks, that it is a dog of great industry and labour, and that it is smaller than the *Pecuaricus*, can be nothing else than the shepherd's dog, which is very laborious in arranging, restraining, and conducting the sheep, and is more industrious and attentive than any other dog. But the greatest difficulty in these passages quoted from Aristotle consists in the different periods of gestation which he ascribes to the different races of dogs. Some of them, he says, go with young two months, others two months and a half,

Evil here, as well as elsewhere, assumes every kind of form. The lion and the tiger, being detached species, hold the first rank. All the others, as the panther, the ounce, the leopard, the lynx, the caracal, the jaguar, the cougar, the ocelot, the ferval, the mangai, and the cat, constitute but one sanguinary family, the different branches of which are more or less extended and diversified, according to the difference of climates. All these animals, though very different in magnitude and figure, resemble each other in their natural dispositions. They all have fiery eyes, short muzzles, and sharp, crooked, and retractile claws. They are all destructive, ferocious, and untameable. The cat, which is the least and smallest species, though reduced to slavery, is neither less perfidious, nor more obedient. The wild cat has preserved the character of the family. He is equally cruel, mischievous, and predatory, as his larger kindred. They are all equally carnivorous, and enemies to the other animals. Man, with all his powers, has never been able to destroy them. He has at all times employed against them

half, and others three months; for all our dogs, of whatever race, go with young about nine weeks, or from sixty-one to sixty-three days; and I know not if ever a greater difference in the time of gestation has been observed than three or four days. But Aristotle might be more skilled in this subject than we are. And, if the facts he advances be true, certain dogs must have a greater affinity with the wolf than others; for we are assured by the hunters, that the wolf goes with young three months, or three months and a half.

them fire, steel, poison, and snares. But, as all the individuals are very prolific, and the species numerous, the efforts of man have been limited to banishing and confining them in the deserts, from which they never issue without marking their paths with terror and with blood. A single tiger escaping from the forest, alarms a whole people, and obliges them to take up arms: How dreadful would be the consequences, if these sanguinary animals went in troops, and, like the wild dogs and jackals, extended their projects of depredation? Nature has bestowed this intelligence upon timid animals; but has happily denied it to the bold and solitary tribes. They always travel alone, and confide solely in their courage and strength. It had not escaped the observation of Aristotle, that no animal possessed of crooked and retractile claws was social, or went in troops*. This remark, which then applied to four or five species only, the only ones of this genus which were known in his time, is now found to be true, and to extend to ten or twelve species that have since been discovered. The other carnivorous animals, as the wolf, the fox, the dog, the jackal, and the *ilatis*, whose claws are straight, go always in troops, and are all timid, and even dastardly.

By comparing, in this manner, all the quadrupeds, and ranking each under its own genus,

* Nullum animal, cui ungues adunci, gregatilis esse perpendimus; *Arist. hist. anim. lib. 1. cap. 4.*

nus, we shall find, that the two hundred species, whose history we have given, may be reduced to a small number of families or principal stems, from which all the others have probably derived their origin.

All the animals common to both Continents, and all those which are peculiar to the Old World, may be reduced to fifteen genera, and nine solitary or detached species. These genera are,

1. The whole-hoofed genus properly so called, which comprehends the horse, the zebra, and the ass, together with the fertile and unfertile mules.
2. The large cloven-hoofed, with hollow horns, as the ox, and the buffalo, with all their varieties.
3. The small cloven-hoofed, with hollow horns, as the sheep, the goat, the gazelle, the antelope, and all the other species which participate of their nature.
4. The cloven hooved, with solid horns, which fall off and are renewed every year. This family comprehends the elk, the rein-deer, the stag, the fallow-deer, the axis, and the roebuck.
5. The ambiguous cloven-hoofed, which is composed of the wild boar, and all the other varieties of the hog, as the hog of Siam with a pendulous belly; that of Guiney, with long pointed ears lying on the back; that of the Canaries, with long, thick tusks, &c.
6. The extensive genus of digitated carnivorous animals, with crooked and retractile claws, in which are comprehended the panther, leopard, ounce, serval, and cat,

with

with all their varieties. 7. Digitated, carnivorous animals with straight and fixed claws, under which are comprehended the wolf, fox, jackal, isatis, and dog, with all their varieties. 8. Digitated carnivorous animals with fixed claws, and a pouch under the tail. This genus is composed of the hyaena, civet, zibet, genet, badger, &c. 9. Digitated carnivorous animals, with a very long body, five toes on each foot, and the thumb separated from the other toes. This genus comprehends the martin, polecat, sable, ferret, ichneumon, weasel, vanfire, &c. 10. The numerous family of digitated quadrupeds, which have two large cutting teeth in each jaw, and no prickles on the body. This genus contains the hare, the rabbit, and all the species of squirrels, dormice, marmots, and rats. 11. Digitated quadrupeds with prickles on their body, as the porcupines and hedge-hog. 12. Digitated animals covered with scales, as the long-tailed and short-tailed manis, or scaly lizards. 13. The amphibious digitated genus, comprehending the otter, beaver, musk-rats, walrus, and seals. 14. The four-handed genus, which includes the apes, baboons, monkeys, makis, loris, &c. 15. Lastly, the winged quadrupeds, comprehending bats of all kinds.—The nine detached species are, the elephant, rhinoceros, hippopotamus, giraffe, camel, lion, tiger, bear, and mole, which are all subject to a greater or smaller number of varieties.

Of

Of these fifteen genera and nine detached species, seven genera and two species are common to both Continents. The two species are the bear and mole. The seven genera are, 1. The large cloven-hoofed, with hollow horns; for the ox is found in America under the form of the bison. 2. The cloven-hoofed, with solid horns; for the elk exists in Canada under the name of *original*, the rain-deer under that of *caribou*, and stags, fallow-deer, and roebucks, are found in almost every province of North America. 3. The digitated carnivorous quadrupeds with fixed claws; for the wolf and fox are found in the New as well as in the Old World. 4. The digitated long-bodied genus; for the pine weasel, martin, and polecat, are found in America. 5. A part of the digitated genus with two large cutting teeth in each jaw, as the squirrels, marmots, rats, &c. are likewise found in America. 6. The digitated amphibious genus, as the walrus, seal, beaver, and otter, exists in the northern regions of the New Continent. 7. The digitated winged genus likewise exists in America; as the bat and vampire.

There remains, therefore, only eight genera and five detached species, which are peculiar to the Old World: 1. The whole-hoofed genus properly so called; for neither horses, nor asses, nor zebras, nor mules, were found in America. 2. The small cloven-hoofed genus with hollow horns;

horns ; for sheep, goats, gazelles, and antilopes, had no existence in the New World. 3. The hog-genus ; for the species of the wild boar exists not in America ; and, though the pecari and its varieties are related to this family, they differ in characters so remarkable as to justify their separation. 4. The same remark is applicable to the carnivorous animals with retractile claws ; and, though the jaguar, cougar, ocelot, and margai appear to belong to this family, none of these species of the New World are found in the Old, and none of those of the Antient Continent are found in the New. 5. The same remark is applicable to the digitated quadrupeds, whose bodies are covered with prickles ; for, though the coendou and Canada porcupine make a near approach to this genus, they differ widely from the hedge-hogs and porcupines. 6. The digitated carnivorous genus, with fixed claws ; for the hyaena, the civets, and the badgers, have no existence in America. 7. The four-handed genus ; for, in America, there are no apes, baboons, monkeys, nor makis. The sapajous, the sagoins, the opossums, &c. though likewise four-handed, differ essentially from those of the Old Continent. 8. The digitated genus whose bodies are covered with scales ; for none of the scaly lizards are found in America ; and the ant-eaters, to which the former may be compared, are covered with hair, and differ too much from the

the scaly lizards to be admitted into the same family.

Of the nine detached species, seven, namely, the elephant, rhinoceros, hippopotamus, giraffe, camel, lion, and tiger, are found only in the Old World; and two, to wit, the bear and mole, are common to both Continents.

If we make a similar enumeration of the animals peculiar to the New World, we shall find, that there are about fifteen different species, which may be reduced to ten genera, and four detached species. These four species are the tapir, the cabiai, the lama, and the pecari: But the tapir is properly the only species which is absolutely detached; for that of the pecari has varieties; and the pacos may be united with the lama, and the Guinea-pig with the cabiai. The ten genera are, 1. Eight species of sapajous. 2. Six species of sagoins. 3. The opossums, phalangers, the tarsiers, &c. 4. The jaguars, cougars, ocelots, margais, &c. 5. Three or four species of coatis. 6. Four or five species of mouffettes, or stinking weasels. 7. The genus of agouti, comprehending the acouchi, the paca, the aperea, and the tapeti, or Brazilian hare. 8. That of the armadillos, which consists of seven or eight species. 9. Two or three species of ant-eaters. 10. Two species of sloths.

These ten genera and four detached species, to which the animals peculiar to the New World may be reduced, though they differ from those

of the Old Continent, have remote relations which seem to indicate something common in their formation, and lead us to causes of degeneration more antient, perhaps, than all the others. We formerly made the general remark, that all the animals of the New World were much smaller than those of the Old. This great diminution in magnitude, whatever be the cause of it, is a primary kind of degeneration, which could not happen without having a considerable influence on the figure of all these animals; and, in comparing them, we must not lose sight of this first effect.

The largest is the tapir, which, as he exceeds not the size of an ass, cannot be compared to the elephant, rhinoceros, or hippopotamus. In the New Continent, he is the largest animal, as the elephant is in the Old. Like the rhinoceros, his upper lip is muscular and prominent; and, like the hippopotamus, he frequents the water. He alone represents, in some degree, these three animals; and his figure, which resembles the ass more than that of any other quadruped, seems to be as much degraded as his stature is diminished. The horse, the ass, the zebra, the elephant, the rhinoceros, and the hippopotamus, had no existence in America: Neither was there, in this New World, any animal which could be compared with them either for magnitude or figure. The tapir seems to be the least remote from the whole of these animals: But, at the same time, he

he is so mixed, and approaches so little to any one of them, that it is impossible to attribute his origin to any particular species: And, notwithstanding the slight relations he has to the rhinoceros, the hippopotamus, and the ass, he ought to be regarded not only as a peculiar species, but even as a singular genus.

Hence the tapir is not even remotely allied to any species of the Old Continent, and has hardly any characters which make him approach those animals to which we have been comparing him. In the same manner, the cabiai has no external relation to any other animal, and he approaches the Guinea-pig, in his external parts only, which belongs to the same Continent, and both species are absolutely different from all those of the Old World.

The lama and pacos seem to possess more perceptible marks of their antient lineage, the first with the camel, and the second with the sheep. The lama, like the camel, has long legs, a very long neck, a light head, and the upper lip divided. He likewise resembles the camel in mildness of disposition, servility of spirit, sobriety, and aptness for labour. Among the Americans, he was the first and the most useful of their domestic animals. He was employed, as the Arabs use the camel, for carrying burdens. To these conformities in the nature of the two animals, we may add the permanent marks of labour; for, though the back of the lama be not deformed

deformed with bunches, like that of the camel; he has natural callosities on his breast, because he has the same habit of reposing on that part of the body. Notwithstanding all these relations, the species of the lama is very different from that of the camel. The lama exceeds not in magnitude one-fourth or one-third of that of the camel. The figure of his body, the quality and colour of his hair, are also very different: His temperament is phlegmatic, and he delights in the mountains only. But the temperament of the camel is adust, and lives spontaneously among burning sands. In fine, there are more specific differences, perhaps, between the camel and lama, than between the camel and giraffe. These three animals possess several common characters, by which they might be united into one genus. But, at the same time, they differ so much in other characters, that they cannot be supposed to have sprung from one another: They are neighbours, but not relations. The giraffe is almost double the height of the camel, and the camel is double that of the lama. The two first belong to the Old Continent, and form distinct species: Of course, the species of the lama, which is peculiar to the New World, is remote from both.

The same remark applies not to the pecari: Though of a different species from the hog, he belongs to the same genus. In figure, and almost every external relation, he resembles the hog; and only differs from that animal in some minute

minute characters, such as the aperture on his back, the figure of the stomach and intestines, &c. We might therefore be led to think, that the pecari had sprung from the same stem with the hog, and that he had formerly passed from the Old to the New World, where, by the influence of the soil, he had degenerated so greatly as now to form a distinct species.

With regard to the pacos, though it seems to have some relations to the sheep by its wool and habit of body, it differs so much in every other article, that they cannot be considered as allied species. The pacos is rather a small kind of lama, and appears not, from any character, to have ever passed from the one Continent to the other. Hence, of the four detached species peculiar to the New World, three, namely, the tapir, the cabiai, and the lama and pacos, appear to have been at all times proper to this Continent. But the pecari, which is the fourth, seems to be only a degenerated species of hog, and to have formerly derived its origin from the Old Continent.

From a similar examination and comparison of the ten genera, to which we have reduced the other animals peculiar to South America, we shall find not only singular relations in their nature, but marks of their antient origin and degeneration. The sapajous and sagoins have so great a resemblance to the monkeys, that they have obtained the common name of ape. We have

have proved, however, that their species, and even their genera, are different. Besides, it would be difficult to conceive how the monkeys of the Old World could assume, in America, a different figure of face, a long, muscular, and prehensile tail, a large partition between the nostrils, and other characters both specific and generic, by which we have distinguished and separated them from the sapajous. But, as the apes, the baboons, and the monkeys, are peculiar to the Old World, the sapajous and sagoins should be regarded as their representatives in the New; for these animals have nearly the same form, both external and internal, and, in their manners and dispositions, they possess many things in common. In the same manner, there are no makis in America, and yet they are represented by the opossums, or four-handed animals with sharp muzzles, which are very numerous in the New Continent, but exist not in the Old. It must be remarked, however, that there is a much greater difference between the nature and form of the makis and these four-handed American animals, than between the monkeys and sapajous; and that the interval between an opossum and a maki is so great, that we cannot think they ever proceeded from each other, without supposing that degeneration is capable of producing effects equal to those of a new nature; for most of these American four-handed species have a pouch under the belly, ten cutting teeth in each jaw, and

a prehensile tail; while the makis have no pouch under their belly, a flaccid tail, and only four cutting teeth in the upper, and six in the under jaw. Hence, though these animals have their hands and fingers constructed in the same manner, and likewise resemble each other in the length of the muzzle, their species, and even their genera, are so different, that it is impossible to imagine they ever proceeded from one another, or that such great and general disparities could be produced by degeneration.

On the other hand, the American tigers, which we have treated of under the appellation of jaguars, couguars, ocelots, and margais, though different in species from the panther, leopard, ounce, and serval of the Old Continent, unquestionably belong to the same genus. All these animals resemble each other greatly, both externally and internally. They have also the same natural dispositions, the same ferocity, the same vehement thirst for blood; and, what makes them approach still nearer in genus, those of the same Continent differ more from each other, than from those of the other Continent. For example, the African panther differs less from the Brazilian jaguar, than the latter differs from the cougar, though they belong to the same country. In the same manner, the Asiatic serval and the margai of Guiana differ less from one another than from the species peculiar to their own Continents. We may, therefore, conclude that
these

these animals have had a common origin, and that they have formerly passed from the one Continent to the other. Their actual differences have proceeded solely from the long continued influence of their new situation.

The mouffettes, or stinking weasels of America, and the European polecat, seem to belong to the same genus. In general, when a genus is common to both Continents, the species of which it is composed are more numerous in the Old than in the New. In this instance, however, the contrary takes place: In America, there are four or five species of polecats, while we have but one, whose nature seems to be inferior to that of all the others; so that the New World, in its turn, appears to have representatives in the Old; and, if we judged only from the fact, we would be led to think, that these animals had taken a contrary route, and passed from America into Europe. The same remark is applicable to some other species. The roebucks and the fallow-deer, as well as the mouffettes, are more numerous and likewise stronger in the New than in the Old Continent. We might, therefore, imagine that they are original natives of America. But, as we know that all animals were created in the Old Continent, we must necessarily admit their migration from the Old to the New World, and at the same time suppose, that, instead of degenerating, like all the other American

can species, they have improved by the influences of the soil and climate.

The ant-eaters, which are singular creatures, and of which there are three or four species in the New World, appear also to have their representatives in the Old. The scaly lizards resemble the ant-eaters in the peculiar character of having no teeth, and of being obliged to stretch out their tongue and feed upon ants. But, if we assign them a common origin, it is strange that, instead of scales, which they have in Asia, they are covered with hair in America.

With regard to the agoutis, pacos, and other animals which constitute the seventh genus peculiar to the New Continent, they can only be compared with the hare and rabbit, from which, however, they all differ in species. It is difficult to assign them a common origin; because the hare is diffused over almost every climate of the Old Continent, without undergoing any other change than in the colour of his hair. It is by no means probable, therefore, that the climate of America should have so far changed the nature of our hares, as to make them tapetis and apereas, which have no tail; or agoutis with a sharp muzzle, and short round ears; or pacos with a large head, short ears, and coarse hair with white bands.

In fine, the coatis, the armadillos, and the sloths, differ so much not only in species, but in genus, from all the animals in the Old World,

that they can be compared to none of them, and that it is impossible to refer them to any common origin, or to ascribe to the effects of degeneration the prodigious differences in their nature from that of any other animal.

Thus, of ten genera and four detached species, to which we have endeavoured to reduce all the animals peculiar to the New World, there are only two, namely, the genus of jaguars, ocelots, &c. and the species of the pecari, with their varieties, which can, with any degree of probability, be referred to the animals of the Old World. The jaguars and ocelots may be regarded as species of the leopard or panther, and the pecari as a species of hog. There are also five genera and one detached species, namely, the species of the lama, the genera of sapajous, sagoins, mouffettes, agoutis, and ant-eaters, which may be compared, though in an equivocal and very distant manner, with the camel, the monkeys, the polecat, the hare, and the scaly lizards: And, in fine, there remain four genera and two detached species, namely, the opossums, the coatis, the armadillos, the sloths, the tapir, and cabiai, which can neither be referred nor compared to any genera or species in the Old Continent. This seems to be a sufficient proof, that the origin of these animals peculiar to the New World cannot be attributed to degeneration alone: However powerful we may suppose the effects of degeneration, we can never suppose, with any appearance of reason,

reason, that these animals were originally the same with those of the Old Continent. It is more probable, that the two Continents were formerly united, and that the species which inhabited the New World, because the soil and climate were most agreeable to their nature, were separated from the others by the irruption of the waters, when they divided Africa from America. This is a natural cause; and similar causes might be conceived which would produce the same effect. For example, if the sea should make an irruption into Asia from east to west, and separate the southern regions of Africa and Asia from the rest of the Continent, all the animals peculiar to these countries, as the elephant, the rhinoceros, the giraffe, the zebra, the orang-outang, &c. would be in the same situation with those of South America. They would be entirely separated from those of the temperate regions, and could not be referred to an origin common to any of the species or genera which inhabit these countries, solely because some imperfect resemblances might be discovered between them.

Hence, to discover the origin of these animals, we must have recourse to the period when the two Continents were united, and trace the first changes which have happened on the surface of the earth. We must, at the same time, consider the two hundred species of quadrupeds as constituting thirty-eight families: And, though this is by no means the present state of nature, but, on the contrary,

contrary, a state of much greater antiquity, which we can reach only by inductions and relations almost equally fugitive as time, that seems to have effaced their traces; we shall, however, endeavour to ascend, by facts and monuments still existing, to those first ages of Nature, and to exhibit those epochas which shall appear to be most clearly indicated.

END of VOLUME VII.



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